Nebraska State Immunization Information System

HL7 – 2.4 & Real-time Transfer Specification

GTS Version 7.2.5

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{ TC "Introduction"\l }**Introduction**

The Nebraska State Immunization Information System (NESIIS) has made available an interactive user interface on the World Wide Web for authorized users to enter, query and update client immunization records. The Web interface makes NESIIS information and functions available on desktops around the state. However, some immunization providers already store and process similar data in their own information systems and may wish to keep using those systems while also participating in the statewide central repository. Others may have different billing needs and may decide they don't want to enter data into two diverse systems. NESIIS has been enhanced to accept HL7 Version 2.4 for batch loads to submit client and immunization information to the NESIIS. NESIIS has also allows providers to submit client and immunization information using HL7 2.4 formatted VXQ^V01 Message (Query for Vaccination Record) and a VXU^V04 Message (Unsolicited Vaccination Update) and receive from NESIIS the resulting HL7 2.4 Response Message in real time. Specifications for HL7 2.4 Real-time start on page 16.

{ TC "The Health Level Seven (HL7) Standard"\l }**The Health Level Seven (HL7) Standard**

The ANSI HL7 standard is widely used for data exchange in the health care industry. The full standard is quite lengthy, covering a variety of situations in patient care and health care finance and no single application is likely to use all of its content. The CDC has worked with HL7 developers to create a set of messages that permit exchange of immunization data. This document covers the subset of HL7 that will be used for client and immunization records exchanged between NESIIS and outside systems.

- The basic unit transmitted in an HL7 implementation is the **message**.
- Messages are made up of several **segments**, each of which is one line of text, beginning with a three-letter code identifying the segment type.
- Segments are in turn made up of several **fields** separated by a delimiter character, "|".

```
MSH|^~\&|VALLEY CLINIC^^^|||NESIIS^^^|19991005032342||VXU^V04|682299|P^|2.4^^|||ER
PID|||79928^^^^PI|A5SMIT0071^^^^^|SMITH^MARY^T^^^^^|JOHNSON^^^^^^^|19951212|F||||
RXA|0|999|19970903|19970903|^^^90701^DTP^CPT|0.5
```

The details of how HL7 messages are put together, for NESIIS purposes, will be explained later in this document. The example above shows the essentials of what a message looks like. In this example, a message is being sent on behalf of Valley Clinic to NESIIS. The message consists of three segments. NOTE: Valley Clinic may or may not be the actual transmitter of the message. The transmitter of the message will be identified by NESIIS from log-in information and not from an HL7 message.

- The Message Header segment (**MSH**) identifies the owner (**VALLEY CLINIC**) of the information being sent and the receiver (**NESIIS**). It also identifies the message as being of type **VXU.** The VXU is an Unsolicited Vaccination Record Update, which is one of the message types defined by HL7.
- The Patient Identification segment (**PID**) gives the client's name (MARY T SMITH), birth date (19951212, in YYYYMMDD format), and other identifying fields.
- The Pharmacy Administration segment (**RXA**) tells that a DTP vaccine, with CPT code 90701, was administered on September 3, 1997 (formatted as 19970903). Many fields are optional and this example may have more information included in it. Some segments can be repeated within a single message. In this example, the message could have included a second RXA segment to record another immunization given.

HL7 does not specify how messages are transmitted. It is flexible enough to be used for both real-time interaction and large batches. The standard defines file header and file trailer segments that are used when a number of messages are gathered into a batch for transmission as a file. NESIIS will use batch files of messages to communicate with outside systems.

{ TC "Scope of this Document"\l }**Scope of This Document**

The General Transfer Specification (GTS) documented here supports automated exchange of data between the NESIIS repository and outside systems. This allows both the client and immunization records to be available in both systems, so as to avoid the need to enter data twice. The remainder of this document specifies how HL7 file messages are constructed for the purposes of NESIIS. It does not cover the methods that are used to transmit files between the NESIIS central repository and

outside systems. It covers only a small subset of the very extensive HL7 standard. Files of messages constructed from the guidelines in this document will fall within the HL7 standard, but there is a wide variety of other possible HL7 messages that are outside the scope of this document.

{ TC "References"\l }References

- See Version 2.1 (September 2002) of the Health Level 7 standard for a full description of all messages, segments, and fields. Information regarding HL7 is at www.hl7.org.
- The National Immunization Program within the Center for Disease Control (www.cdc.gov/nip) has published an Implementation Guide for Immunization Data with the purpose of keeping the use of HL7 for immunization data as uniform as possible.

{ TC "HL7 Message Types Used in WIR Transmissions"\l }HL7 Message Types Used in NESIIS Transmissions

NESIIS uses three message types: ADT, VXU and ACK. The ADT is used for sending client data without any immunizations. The VXU is used for sending client data and immunizations. The ACK is used to acknowledge to the sender that a message has been received. The tables below show the segments that are used to construct each message type. Each segment is one line of text ending with the carriage return character. The carriage return is needed so that the HL7 messages are readable and printable. The messages may appear somewhat cryptic due to the scarcity of white space. (The standard has provisions for inclusion of binary data, but NESIIS will not use these features.) Square brackets [ ] enclose optional segments and curly braces {} enclose segments that can be repeated; thus, an ADT message type could be composed of just MSH and PID segments. Also, any number of NK1 segments could be included in the message. The full HL7 standard allows additional segments within these message types, but they are unused by NESIIS. In order to remain compliant with HL7, their use will not result in an error, but the recipient can ignore the content of the message. The segments that are documented here are sufficient to support the principal NESIIS functions of storing data about clients and immunizations.

ADT
Update Patient Information
MSH   Message Header
PID   Patient Identification
[{NK1}]   Next of Kin / Associated Parties
[{*OBX}]   Observation/Result

VXU
Unsolicited Vaccination Record Update
MSH   Message Header
PID   Patient Identification
[PD1]   Patient Additional Demographic
[{NK1}]   Next of Kin / Associated Parties
[PV1]   Patient Visit
{RXA}   Pharmacy / Treatment Administration
[RXR]   Pharmacy / Treatment Route (Only one RXR per RXA segment)
[{OBX}]   Observation/Result*

ACK
General Acknowledgment
MSH   Message Header
MSA   Message Acknowledgment
[ERR]   Error

*The only OBX segment that is valid within an ADT message is one that specifies a CONTRAINDICATION in the OBX-03 Value Type field. (i.e., 30945-0^Contraindication^LN)

RECOMMENDATIONS:

NESIIS will NOT accept an ADT message (unsolicited demographic update) for a new client unless at least ONE immunization exists for that client in NESIIS. Therefore, it is best to include the demographic information in a VXU message whenever possible, as this message type accommodates BOTH immunization information and demographic update information. If submitting a new client, using the ADT message, it must follow the VXU message for the new client within the file.

When a VXU^V04 (Unsolicited Vaccination Record Update) message type is sent with no RXA segment, a check is done to verify if the client exists in NESIIS or not. If the client already exists in NESIIS, then the demographic update will occur (*if all other update business rules apply). If the client is new to NESIIS, then the client will be rejected per current business rules.

{ TC "Message Segments: Field Specifications and Usage"\l }Message Segments: Field Specifications and Usage

HL7 Segment Structure
Each segment consists of several fields that are separated by "|", which is the field separator character. The tables below define how each segment is structured and contain the following columns:

1. **SEQ**   The ordinal position of the field in the segment. Since NESIIS does not use all possible fields in the HL7 standard, these are not always consecutive.
2. **LEN**   Maximum length of the field
3. **DT**   HL7 data type of the field. See below for definition of HL7 data types.
4. **R/M**   R means required by HL7, and M means mandatory for NESIIS. Blank indicates an optional field.
5. **RP/#**   Y means the field may be repeated any number of times, an integer gives the maximum number of repetitions, and a blank means no repetition is permitted.
6. **TBL#**   Number of the table giving valid values for the field.
7. **ELEMENT NAME**   HL7 name for the field.

- **HL7 data types.** Each field has an HL7 data type. Appendix A of this document lists and defines the HL7 data types needed for NESIIS. The elemental data types Numeric (NM) and String (ST) consist of one value, while some data types, such as Extended Person Name (XPN) are composites.
- **Delimiter characters.** Field values of composite data types consist of several components separated by the **component separator**, "^". When components are further divided into sub-components, these are separated by the **sub-component separator**, "&". Some fields are defined to permit repetition separated by the **repetition character**, "~". When these special characters need to be included within text data, their special interpretations are prevented by preceding them with the **escape character**, "\".

```
MSH|^~\&| .....
XXX|field1|component1^component2^subcomponent3.1&subcomponent3.2^component4| .....
YYY|repetition1~repetition2| .....
ZZZ|data includes escaped \|\~ special characters| .....
```

In the example above, the Message Header segment uses the field separator, "|", immediately after the "MSH" code that identifies the segment. This establishes what character serves as the field separator throughout the message. The next field, the four characters "^~\&", establishes, in order, the component separator character, the repetition character, the escape character, and the sub-component separator character that will apply throughout the message. The hypothetical "XXX" segment includes field1 with no internal structure, but the next field has several components separated by "^", and the third of these is made up of two sub-components separated by "&". The hypothetical "YYY" segment's first field permits repetition, in this example the two values "repetition1" and "repetition2". The hypothetical "ZZZ" segment's field has a text value that includes the characters "|~", and these are escaped to prevent their normal structural interpretation.

In NESIIS, sub-components, repetition and text values requiring the escape character will be rare. Components within fields are common, since names and addresses are represented this way. HL7 permits the use of other delimiters besides the recommended ones and the delimiters used in each message are given in the Message Header segment. NESIIS will always use the recommended delimiters when sending files and requires their use for files received.

Rules for Sending Systems
{ TC "Rules for Sending Systems" }Rules for Sending Systems
The following rules are used by sending systems to construct HL7 messages.
- Encode each segment in the order specified in the message format.
- Begin the segment with the 3-letter segment ID (for example RXA).
- Precede each field with the data field separator ("|").
- Use HL7 recommended encoding characters ("^~\&").
- Encode the data fields in the order given in the table defining segment structure.

- Encode the data field according to its HL7 data type format.
- Do not include any characters for fields not present in the segment. Since later fields in the segment are encoded by ordinal position, fields that are not present do not reduce the number of field separators in the segment. For example, when the second and third fields are not present, the field separators maintain the ordinal position of the fourth field: |field1|||field4
- Data fields that are present but explicitly null are represented by empty double quotes "".
- Trailing separators may optionally be omitted. For example, |field1|field2||||| is equivalent to |field1|field2, when field3 and subsequent fields are not present.
- End each segment with the segment terminator (<u>always</u> the carriage return character, ASCII hex 0D).

{ TC "Rules used by receiving systems to process HL7 messages" }**The following rules are used by receiving systems to process HL7 messages**.

- Treat data segments that are expected but not present as if all data fields in the segment were not present.
- Require use of HL7 recommended Field Separator |, and Encoding characters ^~\& for encoding messages.
- Ignore any data segment that is included but not expected, rather than treating it as an error. The HL7 message types used by NESIIS may include many segments besides the ones in this document, and NESIIS ignores them. NESIIS will not send messages with segments not documented in this specification, but reserves the right to specify more segments at a later date. The rule to ignore unexpected segments facilitates this kind of change.
- Ignore data fields found but not expected within a segment.

The message segments below are needed to construct message types that are used by NESIIS. Each segment is given a brief description excerpted from the HL7 standard. The tables define what fields make up each segment. Since NESIIS does not use all the fields that HL7 defines, there are sometimes gaps in the ordinal sequence of fields. Following HL7 rules, the gaps do not diminish the number of field separators within the segment. For example, if the second and third fields in a segment are not present, their field separators remain in order to indicate that the next field present is the fourth: field1|||field4 .

{ TC "ERR segment" }ERR

The ERR segment is used to add error comments to acknowledgment messages.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	80	CM	R	Y		Error Code and Location

Field Notes:

ERR-1   A composite field with four components.

^<sequence (NM)>^<field position (NM)>^<field component ordinal number (NM)

The first component identifies the segment ID containing the error. The second component identifies the input file line number of the segment containing the error. The third component identifies by ordinal number the field containing the error. The fourth component identifies, by ordinal number, the field component containing the error (0 is used if not applicable) The remaining five components of the CE data type are not valued and their '^' separators are not generated. Note that error text is transmitted in field MSA-3. For example, if the NK1 segment is missing a mandatory field:

```
ERR|NK1^10^2^1
```

This error message identifies the NK1 segment occurring on line 10 of the input file whose mandatory second field (Name) is missing the mandatory 1st component (Family Name).

{ TC "MSA segment" }MSA

The MSA segment contains information sent while acknowledging another message.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	2	ID	R		0008	Acknowledgment Code
2	20	ST	R			Message Control ID
3	80	ST				Text Message

Field Notes:

MSA-1   Acknowledgement code giving receiver's response to a message. AA (Application Accept) means the message was processed normally. AE (Application Error) means an error prevented normal processing. An error message will be put in MSA-3, and for ACK messages the optional ERR segment will be included.

MSA-2   The message control ID from MSH-10 in the message being acknowledged. This allows the sending system to associate this response with the message being responded to.

MSA-3   Text of error message, used when MSA-1 does not have the normal value of AA.

{ TC "MSH segment" }MSH

The MSH segment defines the intent, source, destination and some specifics of the syntax of a message.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	1	ST	R			Field Separator
2	4	ST	R			Encoding Characters
3	180	HD				Sending Application
4	180	HD				Sending Facility
5	180	HD				Receiving Application
6	180	HD				Receiving Facility
7	26	TS				Date/Time Of Message
9	7	CM	R			Message Type
10	20	ST	R			Message Control ID
11	3	PT	R		0103	Processing ID
12	60	VID	R		0104	Version ID
15	2	ID			0155	Accept Acknowledgment Type

Field Notes:

MSH-1 Determines the field separator in effect for the rest of this message. NESIIS requires the HL7 recommended field separator of "|".

MSH-2 Determines the component separator, repetition separator, escape character, and sub-component separator in effect for the rest of this message. NESIIS requires the HL7 recommended values of ^~\&.

MSH-3 Name of the sending application. When sending, NESIIS will use "NESIIS" followed by the current version number of the registry. This field is an optional convenience. See MSH-4 and MSH-6 for the fields principally used to identify sender and receiver of the message.

MSH-4 Identifies for whom the message is being sent (the owner of the message information). When sending, NESIIS will use "NESIIS". When the message is being sent to NESIIS and the Provider Organization owning the information is different than the organization transmitting the message, use either the NESIIS Provider ID of the Provider Organization that owns the information preceded by a component separator (e.g., ^36^) or the short Provider Organization name (e.g., NESIIS^^.) Contact the NESIIS Help Desk for the appropriate organization ID. If the owner of the information and the transmitter of the information are the same Provider Organization, this field can be left blank.

MSH-6 Identifies the message receiver. When sending, NESIIS will use the short Provider Organization name assigned when the provider first registers with the NESIIS database and NESIIS-Web interface.

MSH-7 Date and time the message was created. NESIIS ignores any time component. See the TS data type.

MSH-9 This is a required field. Two components of this field give the HL7 message type (see Table 0076) and the HL7 triggering event (see Table 0003). Within HL7, the triggering event is considered to be the real-world circumstance causing the message to be sent. For NESIIS purposes, this field should have the value ADT^A31 for a message conveying client information or the value VXU^V04 for a message conveying client and immunization information. In acknowledgement messages the value ACK is sufficient and the second component may be omitted.

MSH-10 This is a required field. Message rejection will result if nothing is received in this field. The message control ID is a string (which may be a number) uniquely identifying the message among all those ever sent by the sending system. It is assigned by the sending system and echoed back in the ACK message sent in response.

MSH-11 The processing ID to be used by NESIIS is **P** for production processing. If this field is null, an informational message is generated indicating that NESIIS is defaulting to **P**.

MSH-12 This is a required field. For the parser, the version number that is read in the first MSH segment, of the file, will be the version assumed for the whole file. For example, use a value of "2.3.1" to indicate HL7 Version 2.3.1or "2.4" to indicate HL7 Version 2.4. If there is no version number found in the first MSH segment, a hard error will occur and the file will not be processed.

**For NESIIS to PO providers, the Exchange Data screen will need to be set to the version number that the organization has selected, in which to receive their data files. Setting the version number "tells" the writer which HL7 version format to use when generating the file in (the default will be the most recent version).

MSH-15 This field controls whether an acknowledgement is generated for the message sent. NESIIS suggests a value of ER to ask that acknowledgements be sent only for messages that cannot be processed normally. If the field is empty, NESIIS will assume the value of ER.

{ TC "PID segment" }PID

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
3	20	CX	R	Y	0203	Patient ID (Internal ID)
5	48	XPN	R	Y		Patient Name
6	48	XPN		Y		Mother's Maiden Name
7	26	TS	M			Date/Time of Birth
8	1	IS			0001	Sex
10	80	CE		Y	0005	Race
11	106	XAD		Y		Patient Address
13	40	XTN				Phone number – home
19	16	ST				SSN Number – Patient
22	80	CE		Y	0189	Ethnic Group
24	1	ID			0136	Multiple Birth Indicator
25	2	NM				Birth Order
29	26	TS				Patient Death Date and Time

Field Notes:

PID-3　Sub-components 1 (ID) and 5 (identifier type code) are required in the PID-3 field. When a Provider Organization is sending to NESIIS, use the sending system's Chart Number or other identifier if available. When NESIIS is sending to an outside system it will use the client's NESIIS ID and chart number when it is available. If a Provider Organizations sends the client's NESIIS ID (use "SR" as the identifier type code) in addition to a chart number, the NESIIS ID will be used to locate the client.

PID-5　See the XPN data type. Last name and first name are required in the first two components. If the Name Type Code component is included, use L-Legal *NOTE: If client does not have a first name,* **NO FIRST NAME** *must be entered.* NESIIS does not support repetition of this field.

PID-6　See the XPN data type. In this context, where the mother's name is used for client identification, NESIIS uses only last name and first name. A mother's legal name might also appear in the context of an NK1 segment. NESIIS does not support repetition of this field.

PID-7　Give the year, month, and day of birth (YYYYMMDD). NESIIS ignores any time component.

PID-8　See Table 0001. Use F, M, or U.

PID-10　See Table 0005. NESIIS stores and writes "Unknown" values as null. NESIIS does not accept Hispanic or Latino as a race option. Submit it in the Ethnic Group PID-22. NESIIS does not support repetition of this field.

PID-11　See the XAD data type. NESIIS does not support repetition of this field.

PID-13　See the XTN data type. Version 2.4 includes the support of the N, X, B and C sequences. NESIIS does not support repetition of this field. If PRN is specified in component 2 (telecommunication use code (ID) from table 0201) NESIIS will use the 6th 7th 8th and 9th components for specification of area code, phone number, extension and text, respectively. Otherwise, NESIIS will assume that the phone number is specified in the first component in the [NNN] [(999)]999-9999[X99999][B99999][C any text] format

PID-19　NOTE: Social security number is used for identification purposes only, and is not displayed in screens or distributed to Provider Organizations. Support of PID-19 is for backwards compatibility only. NESIIS recommends its specification in PID-03.

PID-22　See Table 0189. NESIIS stores and writes "Unknown" values as null. NESIIS supports repetition of this field.

PID-24　Use **Y** to indicate that the client was born in a multiple birth.

PID-25　Relevant when client was born in a multiple birth. Use 1 for the first born, 2 for the second, etc. This field is useful in matching client data to existing records.

PID-29　The date of death, if client is deceased. Give the year, month, and day (YYYYMMDD). NESIIS ignores any time component. If a death date is sent, then the Patient Registry Status in PD1-14 must indicate a value of "P" for permanently inactive/deceased.

{ TC "PD1 segment" }PD1

The PD1 carries patient additional demographic information that is likely to change.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
11	80	CE			0215	Publicity Code
12	1	ID			0136	Protection Indicator
13	8	DT				Protection Indicator effective date
14	250	XON				Place of Worship
15	250	CE				Advance directive code
16	1	IS			0441	Immunization registry status
17	8	DT				Immunization registry status effective date
18	8	DT				Publicity Code effective date

Field Notes:

PD1-11 Controls whether recall/reminder notices are sent. NESIIS will recognize "01" to indicate no recall/reminder notices or "02" recall/reminder notices any method.

PD1-12 Controls visibility of records to other organizations. Indicates whether or not consent has been given (or assumed) for record sharing. Three values include: **Null** – patient/guardian has not yet been asked to give consent to share or has not responded, **Y** – sharing is allowed and **N**- sharing is not allowed.

PD1-13 Effective date for protection indicator reported in PD1-12. Format is YYYYMMDD.

PD1-16 Identifies the registry status of the patient. See table 0441.

PD1-17 Effective date for registry status reported in PD1-16. Format is YYYYMMDD.

PD1-18 Effective date for publicity code reported in PD1-11. Format is YYYYMMDD.

{ TC "NK1 segment" }NK1

The NK1 segment contains information about the patient's other related parties. Any associated parties may be identified. Utilizing *NK1-1-set ID*, multiple NK1 segments can be sent to patient accounts.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	4	SI	R			Set ID - NK1
2	48	XPN		Y		Name
3	60	CE			0063	Relationship
4	106	XAD		Y		Address
5	40	XTN		Y		Phone Number

Field Notes:

NK1-1 Sequential numbers. Use "1" for the first NK1 within the message, "2" for the second, and so forth. Although this field is required by HL7, NESIIS will ignore its value, and there is no requirement that the record for the same responsible person keep the same sequence number across multiple messages, in the case that information from the same record is transmitted more than once.

NK1-2 Name of the responsible person who cares for the client. See the XPN data type. NESIIS does not support repetition of this field.

NK1-3 Relationship of the responsible person to the client. See data type CE and Table 0063 in the HL7 tables. Use the first three components of the CE data type, for example |MTH^Mother^HL70063|.

NK1-4 Responsible person's mailing address. See the XAD data type. NESIIS does not support repetition of this field.

NK1-5 Responsible person's phone number. NESIIS does not support repetition of this field. If PRN is specified in component 2 (telecommunication use code (ID) from table 0201) NESIIS will use the 6th 7th 8th and 9th components for specification of area code, phone number, extension and text, respectively. Otherwise, NESIIS will assume that the phone number is specified in the first component in the [NNN] [(999)]999-9999[X99999][B99999][C any text] format.

{ TC "PV1 segment" }PV1

The PV1 segment is used to send visit-specific information.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
2	1	IS	R		0004	Patient Class
20	50	FC	M	Y	0064	Financial Class

Field Notes:

PV1-2   See table 0004. NESIIS will store and write a value of "R" (recurring patient) for this field.

PV1-20 See table 0064. NESIIS defines this field as a required field. If an invalid financial class or date format is received, an INFORMATIONAL error message is generated. The entire message is NOT rejected, as this is an optional HL7 segment.

{ TC "RXA segment" }RXA

The RXA carries pharmacy administration data. It is a repeating segment and can record unlimited numbers of vaccinations.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	4	NM	R			Give Sub-ID Counter
2	4	NM	R			Administration Sub-ID Counter
3	26	TS	R			Date/Time Start of Administration
4	26	TS	R			Date/Time End of Administration
5	100	CE	R			Administered Code
6	20	NM	R			Administered Amount
9	200	CE		Y	NIP001	Administration Notes
10	200	XCN		Y		Administering Provider
11	200	CM				Administered-at location
15	20	ST		Y		Substance Lot Number
17	60	CE		Y	0227	Substance Manufacturer Name
18	200	CE		Y	NIP002	Substance Refusal Reason

Field Notes:

RXA-1   Required by HL7. Use "0" for NESIIS.

RXA-2   Required by HL7. For PO-NESIIS loads, Data Exchange expects incoming values of 999 for this field. Other numeric values are ignored.

NESIIS Data Exchange sends out series information in this field, provided the system is configured to do so. For example, if a dose evaluates to (3 of 4) in the Immunization Evaluator, then the system sends the number 3 in RXA-2. If the dose violates a specific Immunization Evaluator rule, then the system sends 777 in RXA-2. In all other cases, the number 999 is sent in RXA-2. For combination vaccines, 999 is always sent in RXA-2, and the series count for each component antigen in the combination vaccine is sent in grouped OBX segments, which follow the RXA segment. Please see the field notes on OBX-3, OBX-4 and OBX-5.

The ability to send series information in RXA-2 only applies to HL7 Version 2.4. It applies to Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract. Some configuration is needed to send series information in RXA-2. On the Manage Data Exchange Screen, the **Send HL7 Series/Recommend** option displays, and the user must select either "Series Only" or "Both" from the pick list. (This option is hidden if Flat File or HL7 PO-NESIIS is chosen.)

The Send Series/Recommend option also displays on the Organization Extract Screen when the user chooses the HL7 2.4 Transaction Format.

If the user configures the system so that it will **not** send series information, then the system always sends 999 RXA-2.

In the following example, the dose of Encephalitis is the 3rd dose in the series.

```
RXA|0|3|20010207|20010207|39^Japanese encephalitis^CVX^90735^Japanese
     encephalitis^CPT|1.0|||01^^^^^~32851911^NESIIS immunization
     id^IMM_ID^^^|||||||||||||
```

RXA-3   Date the vaccine was given. NESIIS ignores any time component.

RXA-4   Required by HL7. Ignored by NESIIS, which will use the value in RXA-3.

RXA-5   This field identifies the vaccine administered. NESIIS accepts the CVX code, CPT code, Vaccine Trade Name, or Vaccine Group Code for the vaccine administered. If using the CVX code, give the CVX code in the first component and "CVX" in the third component. If using the CPT code, the vaccine group code or vaccine trade name, use components four through six. For example, give the CPT code in the fourth component and "CPT" in the sixth component, |^^^90700^DtaP^CPT|. If using vaccine group code, use "WVGC" as the name of the coding system. If using vaccine trade name, use "WVTN" as the name of the coding system. See the CE data type and HL7 - Table 0292 (CVX Codes), NESIIS – Table WCPT (CPT Codes), NESIIS – Table WVGC (Vaccine Group Codes), and NESIIS – Table WVTN (Vaccine Trade Names).

RXA-6   Dose Magnitude is the number of age appropriate doses administered. For example, a dose magnitude of 2 of a pediatric formulation would be adequate for an adult. NESIIS and HL7 require this field to contain a value. However, a value of 1.0 will be stored in its place.

RXA-9   NESIIS will recognize 00 to indicate Administered Vaccine or 01 to indicate Historical Record. . When sending, NESIIS will include the corresponding immunization id in the second repeating segment.

```
|01^^^^^~9999999^NESIIS immunization id^IMM_ID^^^|
```

RXA-10 Identifies the name of the administering clinician (VEI), ordering authority (OEI), and recorder (REI) of the immunization in NESIIS. The recorder is not support on incoming data transfers and only returns if the immunization is owned by the provider requesting the data. NESIIS will use components 2 – 7 to record the names.

```
|^SMITH^SALLY^S^^^^^^^^^VEI~^O'BRIAN^ROBERT^A^^DR^MD^^^^^^OEI~^THOMAS^KEVIN^R^^^^^^
^^REI|
```
.

RXA-11 NESIIS will use this field to identify the facility where the vaccine was administered. Place the facility name in component 4.

RXA-15 Manufacturer's lot number for the vaccine. NESIIS does not support repetition of this field.

RXA-17 Vaccine manufacturer from Table 0227, for example |AB^Abbott^ MVX^^^|. The HL7 2.4 specification recommends use of the external code set MVX. "When using this code system to identify vaccines, the coding system component of the CE field should be valued as "MVX" not as "HL70227." NESIIS does not support repetition of this field.

RXA-18 When applicable, this field records the reason the patient refused the vaccine. See table NIP002. Any entry in this field indicates that the patient did not take the substance. The vaccine that was offered should be recorded in RXA-5, with the number 0 recorded for the dose number in RXA-2. Do not record contraindications, immunities or reactions in this field. NESIIS does not support repetition of this field.

Notes on Refusals:

a) NESIIS only stores the fact that a refusal of a vaccine occurred, not a specific type of refusal, so all outgoing refusals will be designated as "PARENTAL REFUSAL." Please see the example below.

b) The NESIIS system will not write out refusals which do not have an applies-to date. It will write out multiple refusals for the same vaccine on different dates for those clients who have them.

c) The NESIIS system will accept incoming refusals of the same vaccine on different dates and file them both. However, if they both have the same applies-to date, then only one will be stored.

d) The sending organization will become the refusal owner. In general, only the organization who owns the refusal is permitted to edit it. However, in the case of parent and child organizations, the parent may edit the child's refusals and vice versa.

Here is a sample RXA segment for an MMR refusal given on the date 01/01/2007:
```
RXA|0|0|20070101|20070101|^^^MMR^MMR^WVGC|1.0|||||||||||||||00^PARENTAL REFUSAL^NIP002^^^
```

RXA-20 For Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract, this field records the value PA for doses which are partially administered. A partially administered dose refers to the scenario where the patient jumps and the needle breaks, resulting in an unknown quantity of vaccine entering the patient's system.

{ TC "RXR segment" }RXR

> The Pharmacy/Treatment Route Segment contains the alternative combination of route and site.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	60	CE	R		0162	Route
2	60	CE			0163	Site

Field Notes:

RXR-1   This is the route of administration from table 0162.

RXR-2   This is the site of the route of administration from table 0163.

{ TC "OBX segment" }OBX

> The Observation/Result Segment is used to transmit an observation.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	4	SI				Set ID-OBX
2	3	ID				Value type
3	80	CE	R			Observation Identifier
4	20	ST				Observation sub-ID
5	65536	-	M	Y		Observation Value
11	1	ID	R		0085	Observation Result Status
14	26	TS				Date/Time of the observation

Field Notes:

OBX-1   Sequential numbers. Use "1" for the first OBX within the message, "2" for the second, and so forth.

OBX-2   This field contains the data type which defines the format of the observation value in OBX-5. For incoming PO-NESIIS data, Data Exchange accepts CE for Coded Entry. However, for NESIIS-PO, the system will send out values of CE, TS, NM for Coded Entry, Timestamp, and Number respectively, depending on what is actually sent in OBX-5.

OBX-3   When indicating a **Vaccination Contraindication/Precaution**, use 30945-0 in this field and enter a Contraindication, Precaution, or Immunity code (NIP004) in OBX-5.

> Example: `OBX|1|CE|30945-0^Contraindication^LN||21^acute illness^NIP^^^|||||F|`

> When indicating a **Reaction to Immunization**, use 31044-1 in this field and enter a Reaction code (NESIIS001) in OBX-5.

> Example: `OBX|1|CE|31044-1^Reaction^LN||HYPOTON^hypotonic^NESIIS^^^|||||F|`

> When indicating a **Vaccination Adverse Event Outcome**, use 30948-4 in this field and enter an Event Consequence code (NIP005) in OBX-5.

> Example: `OBX|1|CE|30948-4^Adverse Outcome^LN||E^er room^NIP^^^|||||F|`

For Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract, the system uses this field to send the LOINC Codes for **Series information** for combination vaccines. For each component of a combination vaccine, the system sends out a grouped set of two OBX segments. The first segment identifies the component antigen, and the second segment identifies the Series count.   OBX-3 is used to identify whether the component antigen or the valid series count is noted in OBX-5 respectively.

Here are the LOINC Codes that the system sends in OBX-3 for Series information for combination vaccines.

LOINC Code	Description
38890-0	Component Vaccine Type. This term is used to distinguish separate vaccine components of a multiple antigen vaccine. Included in LOINC 1/2005.
38890-0&30973-2	Dose Number in Series

In the following example, the LOINC Codes are highlighted in OBX-3. These two OBX segments together express that a dose of combination vaccine counts for the 1st dose of DTaP in the DTaP series.

```
OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|20^DTaP^CVX^90700^DTaP^CPT||||||F|
OBX|2|NM|38890-0&30973-2^Dose number in series^LN|1|1||||||F|
```

Please see the end of the OBX field notes for a complete example of how NESIIS sends Series information for combination vaccines.

For Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract, the system uses this field to send the LOINC Codes for **Recommendations**. For each recommendation, the system sends a grouped set of five OBX segments. Here are the LOINC Codes that the system sends out in OBX-3 for Recommendations. The LOINC itself is sent in OBX-3 in order to identify what the value in OBX-5 represents.

LOINC Code	Description
30979-9	Vaccines Due Next
30979-9&30980-7	Date Vaccine Due
30979-9&30973-2	Vaccine due next dose number
30979-9&30981-5	Earliest date to give
30979-9&30982-3	Reason applied by forecast logic to project this vaccine

In the following example, the LOINC Codes are highlighted in OBX-3 for a single recommendation of HepB.

```
OBX|11|CE|30979-9^Vaccines Due Next^LN^^^|3|45^HepB^CVX^90731^HepB^CPT||||||F|
OBX|12|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|3|20050103||||||F|
OBX|13|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|3|1||||||F|
OBX|14|TS|30979-9&30981-5^Earliest date to give^LN^^^|3|20050103||||||F|
OBX|15|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|3|^ACIP schedule||||||F|
```

Please see the end of the OBX field notes for a complete example of how NESIIS sends Recommendations.

OBX-4 For sending out Series Information and Recommendations, the number in this field groups together related OBX segments. For example, a single recommendation for DTP/aP is sent in a grouped set of five OBX segments, all with the same sub-identifier in OBX-4. The sub-identifier increments sequentially.

For example, NESIIS sends out five grouped OBX segments for each recommendation. The following is a single MMR recommendation, all sharing the same Observation sub-ID of 4 in OBX-4.

```
OBX|16|CE|30979-9^Vaccines Due Next^LN^^^|4|03^MMR^CVX^90707^MMR^CPT||||||F|
OBX|17|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|4|20050407||||||F|
OBX|18|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|4|2||||||F|
OBX|19|TS|30979-9&30981-5^Earliest date to give^LN^^^|4|20021105||||||F|
OBX|20|CE|30979-9&30982-3^Reason applied by forecast logic to project this
        vaccine^LN^^^|4|^ACIP schedule||||||F|
```

OBX-5 Text reporting Contraindication, Precaution, or Immunity (NIP004), Reaction (NESIIS001), or Event Consequence (NIP005). NESIIS has imposed a CE data type upon this field. The first component of which is required.
 (e.g.,|PERTCONT^Pertussis contra^NESIIS^^^|)

For Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract, this field holds the value observed for series information and recommendations. The value corresponds to the LOINC in OBX-3. For example, for recommendations, the fourth OBX segment is for the Earliest date. OBX-3 contains the code 30979-9&30981-5 and OBX-5 contains the actual earliest date as follows:

```
OBX|4|TS|30979-9&30981-5^Earliest date to give^LN^^^|1|20010519||||||F|
```

Please see the end of the OBX field notes for complete examples of how NESIIS sends Series for combination vaccines and Recommendations.

OBX-11 Required for HL7. Use "F" for NESIIS.
OBX-14 Records the time of the observation. NESIIS ignores any time component.

NOTE 1: The only valid OBX Observation Identifier (OBX-03) for an **ADT^A31** message type is Contraindication/Precaution (30945-0).

NOTE 2: All OBX messages with an observation identifier of Vaccination Contraindication/Precaution will be returned in an outgoing file in a separate ADT message for the client.

NOTE 3: Complete Example of NESIIS's use of OBX to send Series Information for Combination Vaccines

A single dose of combination vaccine may have a different series dose count for each component. For Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract, the system sends a grouped set of three OBX segments for each component in a combination vaccine. For example, a single dose of Dtap-Hib is sent as below. The first three OBX segments express the dose count of 1 for DTaP. The last three OBX segments express the dose count of 3 for Hib.

```
RXA|0|999|19810807|19810807|50^DtaP-Hib^CVX^90721^DtaP-Hib^CPT|1.0|||01^^^^^~32851914^NESIIS
immunization id^IMM_ID^^^|||||||||||
OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|20^DTaP^CVX^90700^DTaP^CPT||||||F|
OBX|2|TS|38890-0&29768-9^DATE VACCINE INFORMATION STATEMENT PUBLISHED^LN|1|20010730||||||F|
OBX|3|NM|38890-0&30973-2^Dose number in series^LN|1|1||||||F|
OBX|4|CE|38890-0^COMPONENT VACCINE TYPE^LN|2|17^Hib^CVX^90737^Hib^CPT||||||F|
OBX|5|TS|38890-0&29768-9^DATE VACCINE INFORMATION STATEMENT PUBLISHED^LN|2|19981216||||||F|
OBX|6|NM|38890-0&30973-2^Dose number in series^LN|2|3||||||F|
```

NOTE 4: Complete Example of NESIIS's use of OBX to send Recommendation Information

For Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract, a single recommendation is sent in a grouped set of five OBX-segments, which follow a place-holder RXA segment that does not represent any actual immunization administered to the client. The five OBX segments in order express the Vaccine of the recommendation, the recommended date, the dose of the next vaccine due, the earliest date to give, and the reason for the recommendation, which is always the ACIP schedule.

```
RXA|0|0|20010407|20010407|998^No Vaccine Administered^CVX|999|0
OBX|1|CE|30979-9^Vaccines Due Next^LN^^^|1|20^DTP/aP^CVX^90700^DTP/aP^CPT||||||F|
OBX|2|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|1|20010607||||||F|
OBX|3|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|1|1|||||||F|
OBX|4|TS|30979-9&30981-5^Earliest date to give^LN^^^|1|20010519||||||F|
OBX|5|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|1|^ACIP schedule||||||F|
OBX|6|CE|30979-9^Vaccines Due Next^LN^^^|2|85^HepA^CVX^90730^HepA^CPT||||||F|
OBX|7|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|2|20030407||||||F|
OBX|8|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|2|1|||||||F|
OBX|9|TS|30979-9&30981-5^Earliest date to give^LN^^^|2|20020407||||||F|
OBX|10|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|2|^ACIP schedule||||||F|
OBX|11|CE|30979-9^Vaccines Due Next^LN^^^|3|45^HepB^CVX^90731^HepB^CPT||||||F|
OBX|12|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|3|20010407||||||F|
OBX|13|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|3|1|||||||F|
OBX|14|TS|30979-9&30981-5^Earliest date to give^LN^^^|3|20010407||||||F|
OBX|15|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|3|^ACIP schedule||||||F|
```

The ability to send Recommendations in these grouped OBX segments only applies to HL7 Version 2.4. It applies to Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract. Some configuration is needed to send Recommendations in this way. On the Manage Data Exchange Screen, the **Send HL7 Series/Recommend** option displays, and the user must select either "Recommendations Only" or "Both" from the pick list. (This option is hidden if Flat File or HL7 PO-NESIIS is chosen.)

The Send Series/Recommend option also displays on the Organization Extract Screen when the user chooses the HL7 2.4 Transaction Format.

If the user configures the system so that it will **not** send recommendations, then the system will omit sending the grouped set of five OBX segments entirely.

The text shows "Last Update: 3/30/2010" at top right.

{ TC "Batch Files of HL7 Messages"\l }Batch Files of HL7 Messages

The definitions above tell how to create messages containing client and immunization data. Each message can logically stand on its own and HL7 is compatible with various methods of online and batch transmission. NESIIS uses batch files to transmit many messages together. HL7 provides special header and footer segments to structure batch files. These segments are not part of any message, but serve to bracket the messages defined above. The structure of a batch file is as follows.

```
FHS                 (file header segment)

{ BHS               (batch header segment)

 { [MSH               (zero or more HL7 messages)

   ....

   ....

   ....

] }

  BTS               (batch trailer segment)

}

FTS                 (file trailer segment)
```

{ TC "FHS – File Header Segment" }FHS

File Header Segment{xe "FHS"}{xe "Segments: FHS"}

The FHS segment is used to head a file (group of batches).

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	1	ST	R			File Field Separator
2	4	ST	R			File Encoding Characters
3	15	ST				File Sending Application
4	20	ST	M			File Sending Facility
6	20	ST	M			File Receiving Facility
7	26	TS	M			File Creation Date/Time
9	20	ST	M			File Name/ID
10	80	ST				File Header Comment
11	20	ST	M			File Control ID
12	20	ST				Reference File Control ID

Field Notes:

FHS-1   Same definition as the corresponding field in the MSH segment.
FHS-2   Same definition as the corresponding field in the MSH segment.
FHS-3   Same definition as the corresponding field in the MSH segment.
FHS-4   Same definition as the corresponding field in the MSH segment.
FHS-6   Same definition as the corresponding field in the MSH segment.
FHS-7   Same definition as the corresponding field in the MSH segment.
FHS-9   Name of the file as transmitted from the initiating system.
FHS-10 Free text, which may be included for convenience, but has no effect on processing.
FHS-11 This field is used to identify a particular file uniquely among all files sent from the sending facility identified in FHS-4.
FHS-12 Contains the value of FHS-11-file control ID when this file was originally transmitted. Not present if this file is being transmitted for the first time.

{ TC "FTS – File Trailer Segment" }FTS

File Trailer Segment {xe "FTS"}{xe "Segments: FTS"}

The FTS segment defines the end of a file.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	10	NM	M			File Batch Count
2	80	ST				File Trailer Comment

Field Notes:

FTS-1   The number of batches contained in this file. NESIIS normally sends one batch per file and discourages sending multiple batches per file.
FTS-2   Free text, which may be included for convenience, but has no effect on processing.

{ TC "BHS – Batch Header Segment" }BHS
    Batch Header Segment {xe "BHS"}{xe "Segments: BHS"}

    The BHS segment defines the start of a batch.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	1	ST	R			Batch Field Separator
2	4	ST	R			Batch Encoding Characters
3	15	ST				Batch Sending Application
4	20	ST	M			Batch Sending Facility
6	20	ST	M			Batch Receiving Facility
7	26	TS	M			Batch Creation Date/Time
10	80	ST				Batch Comment
11	20	ST	M			Batch Control ID
12	20	ST				Reference Batch Control ID

Field Notes:
BHS-1   This field contains the separator between the segment ID and the first real field, *BHS-2-batch encoding characters*. As such it serves as the separator and defines the character to be used as a separator for the rest of the segment. NESIIS requires | (ASCII 124).
BHS-2   This field contains the four characters in the following order: the component separator, repetition separator, escape characters and sub-component separator. NESIIS requires ^~\&, (ASCII 94, 126, 92 and 38 respectively).
BHS-3   Same definition as the corresponding field in the MSH segment.
BHS-4   Same definition as the corresponding field in the MSH segment.
BHS-6   Same definition as the corresponding field in the MSH segment.
BHS-7   Same definition as the corresponding field in the MSH segment.
BHS-10 Free text, which may be included for convenience, but has no effect on processing.
BHS-11 This field is used to uniquely identify a particular batch. It can be echoed back in *BHS-12-reference batch control ID* if an answering batch is needed. For NESIIS purposes, the answering batch will contain ACK messages.
BHS-12 This field contains the value of *BHS-11-batch control ID* when this batch was originally transmitted. Not present if this batch is being sent for the first time. See definition for *BHS-11-batch control ID*.

{ TC "BTS – Batch Trailer Segment" }BTS
    Batch Trailer Segment{xe "BTS"}{xe "Segments: BTS"}

    The BTS segment defines the end of a batch.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	10	ST	M			Batch Message Count
2	80	ST				Batch Comment

Field Notes:
BTS-1   This field contains the count of the individual messages contained within the batch.
BTS-2   Free text, which can be included for convenience, has no effect on processing.

{ TC "File Interchange between WIR and Outside Systems"\l }File Interchange between NESIIS and Outside Systems

The central repository of NESIIS contains records of clients from around the state. Client and immunization records flow both ways between NESIIS and outside systems. Data, for a particular client, is transmitted by NESIIS to an outside system (Provider Organization) only if the client is identified as having a relationship with that Organization AND the relationship was created by transmitting the client's record to NESIIS. So, an exchange of information about a given client is always initiated by the outside system. There are three options for exchanging data with NESIIS:
(1) The Provider Organization can send data to NESIIS and request that no data is returned from NESIIS.
(2) The Provider Organization can request data from NESIIS while not providing data to NESIIS.
(3) The Provider Organization can send data to NESIIS and NESIIS will return any updated information regarding the clients that have a relationship with that Provider Organization.

Note: client and immunization data can also be entered, queried, and modified using the NESIIS-Web interface. This provides an alternate way of identifying a client as having a relationship with a Provider Organization. The use of NESIIS-Web is not required to create a relationship between a Provider Organization and a client. The first transmission to NESIIS, for a client immunization record, will create the link that will cause NESIIS to transmit that client's record to the outside system.

HL7 messages are always part of a two-way exchange between an initiating system and a responder. Sometimes the initial message implies specific data to be sent in a response. Other times, as is the case with NESIIS client and immunization data, the principal response of the receiving system is to process the message and post whatever it contains to its own database. For these cases, HL7 provides the ACK message type, which contains no new application data, but allows the receiver to inform the initiator that the message has been received and processed successfully. If an error prevents successful processing, optional parts of the ACK message will allow this to be communicated as well.

For exchanges between NESIIS and outside systems, it is the responsibility of the outside system to initiate the transfer of the first file, containing ADT and/or VXU messages with client and immunization data. After processing those messages, NESIIS responds with a file of ACK messages. At the same time or soon after, NESIIS also creates another file of ADT and VXU messages, containing the full client record, to send to the Provider Organization that initiated the first transfer. It is the responsibility of that Organization as receiver to transmit back a file of ACK messages. During this second exchange, in terms used by HL7, NESIIS is the initiator and the outside system is the respondent. However, it is the receipt of the first file initiated by the outside system that causes NESIIS to initiate sending its own data file.

	Provider Organization	NESIIS	
		Outgoing	**Receiving**
1.	Creates a file of client and immunization records that have changed since they were last transmitted to NESIIS.		
2.	Transmits the file to NESIIS.		
3.			Processes the file received, creates a file of ACK messages.
4.		Transmits the ACK file back to the initiator of the original file.	
5.	Processes the ACK file to confirm success of the file transmission.		
6.		Creates a file of client and immunization records that have changed since they were last transmitted to this Provider Organization.	
7.		Transmits this file to the Provider Organization.	
8.	Processes the file received, creates a file of ACK messages.		
9.	Transmits the ACK file back to NESIIS		
10.			Processes the ACK file to confirm success of the file transmission.

The 15th field, in the MSH message header segment, allows the initiator to ask that the message be acknowledged only in the case of an error and NESIIS supports this in order to minimize the number of ACK messages transmitted. In this case, the

ACK file contains only error messages (an optional form of the ACK message type). The original messages, with no answering error messages, are implicitly acknowledged as successfully processed. If all messages in a batch are successful, the answering ACK file will only contain file batch headers and footers, with no actual ACK messages. For Step, in the above table, it is permissible for a Provider Organization to send a file containing only file batch headers and footers as a way of triggering the file that NESIIS creates in Step 6. It is also possible that the file, NESIIS creates in Step 6, will contain only file batch headers and footers if there are no records to send.

{ TC "Examples" }**Examples**

To illustrate how a NESIIS HL7 file is put together we will document how the fictional organization, Valley Clinic, formats client and immunization records to be transmitted to NESIIS. The following table displays the information to be transmitted and it is organized into HL7 segments and fields. For example, PID-3 refers to the third field in the Patient Identification segment.

Information to transmit	Data value to be entered	HL7 Format
• Client #1		PID segment
• Chart Number (ID on Valley Clinic's system)	45LR999	PID-3
• Name	GEORGE M MILLER JR	PID-5
• Mother's maiden name	MARTHA OLSON	PID-6
• Birth date	February 27, 1995	PID-7
• Sex	M	PID-8
• Address	123 MAIN ST LINCOLIN, NE 68509 NE109 (Lancaster County, NE)	PID-11
• Social Security Number	000111222	PID-19
• Multiple Birth Indicator	Y (client was born as part of a multiple birth)	PID-24
• Birth Order	2 (second birth of a multiple birth)	PID-25
• Publicity Code	02	PD1-11
• Protection Indicator	Y (client records are visible by other provider organizations)	PD1-12
• Patient Registry Status	A (client is active in the registry)	PD1-14
• Responsible Person (parent or other person who cares for client)		NK1 segment
• Name	MARTHA MILLER	NK1-2
• Relationship to client	MTH	NK1-3
• Address	123 MAIN ST LINCOLIN, NE 68509 NE109 (Lancaster County, NE)	NK1-4
• Phone	402 123 4567	NK1-5
• Responsible Person		NK1 segment
• Name	GEORGE MILLER	NK1-2
• Relationship to client	FTH	NK1-3
• Client #2		PID segment
• Chart Number	23LK729	PID-3
• Name	MARIA CALIFANO	PID-5
• Mother's maiden name	ANGELICA DISTEFANO	PID-6
• Birth date	April 13, 1998	PID-7
• Sex	F	PID-8
• Immunization		RXA segment
• Date administered	July 23, 1999	RXA-3
• Vaccine	DtaP	RXA-5
• CPT Code	90700	RXA-5
• Dose size	0.5	RXA-6
• Administering Provider Organization	Valley Clinic	RXA-10
• Immunization		RXA segment
• Date administered	July 23,1999	RXA-3

Information to transmit	Data value to be entered	HL7 Format
• Vaccine	MMR	RXA-5
• CPT Code	90707	RXA-5
• Dose size	0.5	RXA-6
• Administering Provider Organization	Valley Clinic	RXA-10
• Client #3		PID segment
• Chart Number	92HG9257	PID-3
• Name	JOSEPH FISHER	PID-5
• Mother's maiden name	MARY LASOWSKI	PID-6
• Birth date	May 28, 1998	PID-7
• Sex	M	PID-8
• Immunization		RXA segment
• Date administered	July 29, 1999	RXA-3
• Vaccine	MMR	RXA-5
• CPT Code	90707	RXA-5
• Dose	0.5	RXA-6
• Administering Provider Organization	Valley Clinic	RXA-10
• Lot number	AD19487	RXA-15
• Lot expiration date	December 12, 1999	RXA-16
• Lot manufacturer	FLYBYNIGHT LABORATORIES (this manufacturer is not found in the valid list in HL7 Table 0227, and the invalid value will cause NESIIS to reject the message with an error message)	RXA-17

In an HL7 message, each segment is a single text line, ending with the carriage return character. In the examples, long lines are broken artificially for display purposes and the carriage return character is denoted by <CR>.

```
FHS|^~\&|VALSYS|VALCLIN||NESIIS|19990802091523||filename1.hl7|WEEKLY HL7 UPLOAD|00009972<CR>
BHS|^~\&|VALSYS|VALCLIN||NESIIS|19990802091523|||||00010223<CR>
MSH|^~\&|VALSYS|VALCLIN||NESIIS|19990802091524||ADT^A31|00000123|P|2.4|||AL<CR>
PID||||45LR999^^^^PI||MILLER^GEORGE^M^JR|OLSON^MARTHA|19950227|M|||123 MAIN ST^^
        LINCOLN^NE^68509^US^^^NE109||||||||||000111222|||||Y|2<CR>
PD1 |||||||||||||02^REMINDER/RECALL – ANY MENTOD^HL70215|Y| |A<CR>
NK1|1|MILLER^MARTHA|MTH^Mother^HL70063|123 MAIN ST^^ LINCOLN^NE^68509^US^^^NE109
        |(402)123-4567<CR>
NK1|2|MILLER^GEORGE|FTH^Father^HL70063<CR>
MSH|^~\&|VALSYS|VALCLIN||NESIIS|19990802091524||VXU^04|00000124|P|2.4|||ER<CR>
PID||||66782^^^SR~23LK729^^^^PI|CALIFANO^MARIA|DISTEFANO^ANGELICA|19980413|F<CR>
RXA|0|999|19990723|19990723|^^^90700^DTaP^CPT|0.5|||||VALCLIN<CR>
RXA|0|999|19990723|19990723|^^^90707^MMR^CPT|0.5|||||VALCLIN<CR>
MSH|^~\&|VALSYS|VALCLIN||NESIIS|19990802091526||VXU^04|00000125|P|2.4|||ER<CR>
PID||||927389^^^^SR~92HG9257^^^^PI|FISHER^JOSEPH|LASOWSKI^MARY|19980528|M<CR>
RXA|0|999|19990729|19990729|^^^90707^MMR^CPT|0.5|||||VALCLIN|||||AD19487|
        19991212|ZZ^FLYBYNIGHT LABORATORIES^HL70227||||||A<CR>
BTS|3<CR>
FTS|1<CR>
```

Note: When a client is being introduced to NESIIS, the VXU message must precede the ADT message, since NESIIS must have at least one immunization for a client before being added to the database. Sending ADT and VXU messages for the same client is redundant, since the VXU message is capable of reporting all information that is also found in the ADT.
In the example above, Valley Clinic sends a file of three HL7 messages to NESIIS. Batch header/footer segments bracket the messages. The first message type is an ADT, which is used to send client demographic data without including immunization information. This message type MUST follow a VXU message for the client if the client is new to the NESIIS system.

Client George M Miller Jr. is identified by Valley Clinic's chart number, 45LR999, in his PID segment. The message could have included George's NESIIS ID number in field PID-3, but does not have to, if it is not recorded in Valley Clinic's system. George's mother's maiden name, birth date, sex, address, and social security number also serve to identify him. Some other

optional fields are not present, including some fields from the full HL7 standard not defined in this document because they are not used by NESIIS. Fields not present do not diminish the number of "|" delimiters, so later fields can be identified by ordinal position in the segment. Two NK1 segments give some information for George's mother and father, just the minimum required for his father, with address and telephone fields for his mother.

The next two PID segments in the second and third messages give a NESIIS client ID in field PID-3. This must have been transmitted earlier from NESIIS to Valley Clinic's system. In this case it is legitimate to omit more of the optional PID fields, since NESIIS must have at least the minimum required information for these clients even to create a record. However, if there is a possibility that Valley Clinic has new or changed information to send to NESIIS, these fields should be present, and it does no harm to repeat fields even if they have been transmitted previously.

```
FHS|^~\&|NESIIS|NESIIS||VALCLIN|19990803200106||filename2.hl7||000023479|00009972<CR>
BHS|^~\&|NESIIS|NESIIS||VALCLIN|19990803200116||||00004321|00010223<CR>
MSH|^~\&|NESIIS|NESIIS||VALCLIN|19990803200117||ACK|00000456|P|2.4<CR>
MSA|AA|00000123<CR>
MSH|^~\&|NESIIS|NESIIS||VALCLIN|19990803200119||ACK|00000458|P|2.4<CR>
MSA|AE|00000125|INVALID MANUFACTURER CODE<CR>
ERR|RXA^152^17^1<CR>
BTS|2|<CR>
FTS|1<CR>
```

NESIIS answers the file from the above example with a file of ACK messages. Valley Clinic's message 00000123 had the value AL in field MSH-15, asking for acknowledgements of all messages. The value AA in MSA-1 indicates that this message was processed without error. The next message, 00000124, uses the value ER to ask for acknowledgement only in case of errors, so this message is acknowledged implicitly by the absence of an ACK message for it. This example while legitimate is for purposes of illustration and most providers will probably prefer to follow the NESIIS recommendation of error acknowledgements only. The last message, 00000125, did contain an error, and the ERR segment in its acknowledgement indicates the segment ID (RXA) of the segment, the line number (152) where it appears in the input file, the errant field (17)and the field component (1). . The MSA segment contains the error message. Errors will be generated for missing required data, invalid data or any other deviance from the form and content of messages as specified in this document. If all three messages in the first file above had requested error acknowledgement only and none had any errors, then the answering file from NESIIS would contain just the FSH, BHS, BTS, and FTS segments. All the messages would be implicitly acknowledged as successfully processed.

In the sample file exchange above, the outside system initiated the exchange with the file of ADT and VXU segments and NESIIS responded with ACK segments. The format is identical when NESIIS sends ADT and VXU segments out and the ACK responses are similar too. In the FHS, BHS, and MSH segments, the values of the fourth and sixth fields are reversed to show sender and receiver. NESIIS always sends its own client identifier in the required field PID-03 and includes the outside system's identifier in PID-03 if known. Outside systems are encouraged to store NESIIS's client ID, and use it in PID-03 when sending to NESIIS. This provides a firm basis for client identification makes processing easier for the NESIIS system and avoids errors in storing client information, such as creation of duplicate records when an insufficiently identified client record cannot be matched with a record already in the NESIIS database. Though NESIIS makes a great effort to match client records effectively, use of the NESIIS client ID is the best guarantee of clean and useful data.

{ TC "Real-time Processing"\l }Real-time Processing

"Real-time" processing refers to the ability to transmit an HL7 2.4 formatted VXQ^V01 Message (Query for Vaccination Record) and a VXU^V04 Message (Unsolicited Vaccination Update) and receive from NESIIS the resulting HL7 2.4 Response Message in real time. A provider organization will query a registry to get information on a certain client (i.e. send an HL7 2.4 VXQ^V01 message) and will receive an HL7 2.4 Message Response (i.e. VXR^V03, VXX^V02, ACK or QAK) to that query in real time

In order to have this capability, provider organizations need to perform the following:

1. Obtain or develop, install and configure a client interface capable of transmitting an HL7 formatted Message file via the Electronic Business using eXtensible Markup Language (ebXML) infrastructure to securely transmit public health information over the Internet to the Public Health Information Network Messaging System (PHINMS) Message Receiver.

    The CDC provides, free of charge, their PHINMS client Message Sender for communication with their PHINMS Message Receiver. Alternatively, the provider may choose to develop their own ebXML Message Sender to communicate with the PHINMS Message Receiver.

2. { XE "Electronic Business Extensible Markup Language" }The provider organization will submit a text file containing HL7 2.4 formatted VXQ^V01 and VXU^V04 Messages (up to 1000 messages are accepted) to be delivered via their ebXML-based client Message Sender to the NESIIS PHINMS Message Receiver. NESIIS will process the Messages and send back via the PHINMS Message Receiver a file of HL7 2.4 formatted Response Messages, one per associated query or vaccination update request.

3. It is the responsibility of the provider organization to obtain or develop, install and configure an ebXML client Message Sender for sending the HL7 2.4 formatted Message Requests and receiving the resulting HL7 2.4 formatted Message Response file generated by NESIIS

4. The provider organization will need to obtain from NESIIS a CPA (Collaboration Protocol Agreement) for access to the NESIIS Real-time system.

5. The provider organization will need to obtain the NESIIS SSL certificate for secure access. See Appendix C (Obtaining the NESIIS SSL Certificate) for detailed instructions. Please note: your certificate must be renewed annually. You will need to repeat the procedure detailed in Appendix C on an annual basis.

**NESIIS PROVIDES NEITHER INSTALLATION, CONFIGURATION NOR TECHNICAL SUPPORT FOR THE EBXML CLIENT MESSAGE SENDER.

Full documentation and contact information for the PHINMS product may be found at the following link:
http://www.cdc.gov/phin/

Full documentation for the ebXML specification may be found at the following link:
http://www.ebxml.org/specs

PHINMS is ebXML version 2.0 compliant.

The following section outlines the various message types that are sent in real-time files.

Real-time files that provider organizations send to the NESIIS can contain any of the following message types:

{ TC "VXU^V04" }VXU^V04

    Unsolicited Vaccination Update

MSH	Message Header
PID	Patient Identification
[PD1]	Patient Additional Demographic
[{NK1}]	Next of Kin / Associated Parties
[PV1]	Patient Visit
RXA	Pharmacy / Treatment Administration (at least ONE RXA is REQUIRED by NESIIS)
[RXR]	Pharmacy / Treatment Route (Only one RXR per RXA segment)
[{OBX}]	Observation/Result

{ TC "VXQ^V01" }VXQ^V01

    Query for Vaccination Record

MSH	Message Header Segment
QRD	Query Definition Segment

QRF   Query Filter Segment (NESIIS has made this segment REQUIRED)

Real-time (response) files that the NESIIS sends to provider organizations can contain any of the following message types:

{ TC "VXR^V03" }VXR^V03
        Response TO Vaccination Query Returning the Vaccination Record
MSH   Message Header Segment (One per message)
MSA   Message Acknowledgment Segment (One per message)
QRD   Query Definition Segment (One per message)
QRF   Query Filter Segment (One per message—required by NESIIS)
PID   Patient Identification Segment (One per matching client)
  [PD1]   Additional Demographics
[{NK1}]   Next of Kin Segment (Optional, zero or more per matching client)
[PV1]
[{
   RXA   Pharmacy Administration
   [RXR]   Pharmacy Route
      [{OBX}]   Observation/Result Contraindications or Reactions
}]
[{OBX}]   Observation/Result Vaccines Due Next

{ TC "VXX^V02" }VXX^V03
        Response TO Vaccination Query (Returning Multiple PID Matches)
MSH   Message Header Segment (One per message)
MSA   Message Acknowledgment Segment (One per message)
QRD   Query Definition Segment (One per message)
QRF   Query Filter Segment (One per message—required by NESIIS)
{
   PID   Patient Identification Segment (One per matching client)
   [{NK1}]   Next of Kin Segment (Optional, zero or more per matching client)
}

{ TC "ACK" }ACK
        General Acknowledgment
MSH   Message Header Segment
MSA   Message Acknowledgment Segment
[ERR]   Error

{ TC "QCK" }QCK
        Query General Acknowledgment
MSH   Message Header Segment
MSA   Message Acknowledgment Segment
[ERR]   Error
[QAK]   Query Acknowledgment Segment

Page 7 of this document outlines the rules/specifications needed to construct a HL7 message. These same rules must be applied for Real-time message processing. **Note: Batch Message Headers (i.e. FHS, BHS) and footers (i.e. FTS, BTS) are NOT required for Real-time processing.

The message segments below are needed to construct message types that are used by NESIIS. Each segment is given a brief description excerpted from the HL7 standard. The tables define what fields make up each segment. Since NESIIS does not use all the fields that HL7 defines, there are sometimes gaps in the ordinal sequence of fields. Following HL7 rules, the gaps do not diminish the number of field separators within the segment. For example, if the second and third fields in a segment are not present, their field separators remain in order to indicate that the next field present is the fourth: field1|||field4.

{ TC "MSH – Message Header Segment" }MSH
        Message Header Segment
For VXU and VXQ message types, the MSH segment must be constructed according to normal HL7 format specifications (refer to Pg. 5 of this document). For Real-time processing, NESIIS limits the number of MSH segments that can be processed in a single file. Files containing more than 1000 MSH segments will be rejected and an ACK message will be generated, informing the provider that 1000 is the maximum number of MSH segments that NESIIS accepts for Real -time processing.

{ TC "VXU^V04 – Unsolicited Vaccination Record Update" }VXU^V04
      Unsolicited Vaccination Record Update

As stated earlier in this document, the VXU message is used for sending client demographic and immunization specific data. This message type can be sent via Real-time. VXU segments should be constructed according to normal HL7 format specifications (refer to pages 5-9 of this document). A VXU message must be received in the HL7 2.4 format; NESIIS does not support prior HL7 versions for Real-time processing. NESIIS validates the version by reading the MSH-12 field. A VXU message must contain |2.4^^| in MSH-12.

Immunization deletions can be submitted for both batch HL7 2.4 and Real-time submissions. To indicate a deletion, the RXA-21 field <u>must</u> be populated with a value of "D". Below is an example of a RXA deletion segment. If the number of deletions received through batch exceeds 5% of the total number of immunizations or more than 50 immunizations are marked for deletion, NESIIS will reject the file.

RXA|0|999|19860715|19860715|^^^90718^Td^CPT|0|||05^^^^^||^^^208^^^^^^^^^^^|||||||D|

{ TC "VXQ^V01 – Query for Vaccination Record" }VXQ^V01
      Query for Vaccination Record

When a health care provider (participating in an immunization registry) needs to obtain a complete patient vaccination record, a VXQ (query) is sent to the immunization registry for the definitive (last updated) immunization record. The three segments that make up a VXQ message are the MSH (message header), QRD (query definition) and QRF (query filter). For a VXQ message, the MSH-09 field must contain |VXQ^V01| and the segments must be in the following sequence order:

MSH|^~\&|IRPH|IRPH|IRPH|IRPH|200212091511||VXQ^V01|0000001|P^|2.4||||ER
QRD|19970522|R|I|000000001|||25RD|4211^KENNEDY^JOHN^FITZGERALD^JR|VXI|^VACCINE INFORMATION^HL700048|^S11S|
QRF|MA0000|||||256946789~19900607~MA~MA99999999~88888888~KENNEDY^JACQUELINE^LEE~BOUVIER~8986667 25~KENNEDY^JOHN^FITZGERALD~822546618|

The QRD and QRF segments are outlined in detail below.

{ TC "QRD – Query Definition Segment" }QRD
      Query Definition Segment

Used to define a query.

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	26	TS	R			Query date/time
2	1	ID	R		0106	Query Format Code
3	1	ID	R		0091	Query Priority
4	10	ST	R			Query ID
5	1	ID	O		0107	Deferred response type
6	26	TS	O			Deferred response date/time
7	10	CQ	R		0126	Quantity limited request
8	60	XCN	R	Y		Who subject filter
9	60	CE	R	Y	0048	What subject filter
10	60	CE	R	Y		What department data code
11	20	CM	O	Y		What data code value qualifier
12	1	ID	O		0108	Query results level

Field Notes:

QRD-01 Date the query was generated by the application program. NESIIS requires this field and verifies that a valid date is received. The minimum format of YYYYMMDD is required. A null/invalid value results in message rejection.

QRD-02 Query/response format code. NESIIS requires this field and only accepts a value of "R". A null/invalid value results in message rejection.

QRD-03 Time frame in which the response is expected. NESIIS requires this field and only accepts a value of "I". A null/invalid value results in message rejection.

QRD-04 Unique identifier for the query assigned by the querying application. NESIIS requires this field and null/invalid values result in message rejection. This field is returned intact by NESIIS in a response (VXR or VXX).

QRD-05 Used to indicate a deferred response. This is an optional field. NESIIS does not support a deferred response.

QRD-06 Used to indicate the date/time of the deferred response. This is an optional field. NESIIS does not support a deferred response.

QRD-07 Maximum length of the response that can be accepted by the requesting system. NESIIS requires this field and only accepts a value of "RD" in the 2nd component. The 1st component is a numerical value. A null/invalid value in either sub-component results in message rejection. NESIIS will interpret the units as the maximum number of client MATCHES to be returned via a VXX response message.

    *Note: NESIIS will return a <u>maximum</u> of 10 records per query message submitted. If a value of 0 (zero) is received (i.e. |0RD|) then NESIIS will return the maximum allowable number of clients found to be matching the NESIIS.

QRD-08 Identifies the subject of the query or whom the inquiry is about. The 1st component is optional. It is used to identify the NESIIS ID for the client, if known. The 2nd component is required by NESIIS. If the first or last name OR both names are missing (regardless if there are repeating full names after the first) it results in message rejection. NESIIS supports repetition of this field.

Note: If the 1st component is used, NESIIS will find the client in the registry with the matching internal ID. If a match is found, NESIIS will then compare the first and last name along with the birth date of both the matched client and the client in the QRD. If the name and birth date is <u>exact</u>, the client is returned in a VXR. If a client isn't found using the internal ID, NESIIS will ignore that value and find clients that match the remaining information.

QRD-09 Describes the kind of information required to satisfy the request. NESIIS requires this field and a value of "VXI" must populate the 1st component. NESIIS supports repetition of this field. Null/invalid values result in message rejection if the field does not repeat. If the field repeats there must be at least one value of "VXI" to be valid.

QRD-10 Identifies the "what" department data code. NESIIS requires this field and supports repetition of it. Null/invalid values will result in message rejection.

QRD-11 Further refines the inquiry by data code qualifiers by providing a window or range. This is an optional and repeatable field.

QRD-12 Used to control level of detail in results. This field is optional and will be populated by NESIIS with the total count of PID matches found in NESIIS when Query results in a VXX Response Message.

Example:
```
QRD|19970522|R|I|0000001|||25^RD|4211^KENNEDY^JOHN^FITZGERALD^JR|VXI|^VACCINEINFORMATION^HL700
048|^S11S|20
```

{ TC "QRF – Query Filter Segment" }<u>**QRF – Query Filter Segment – REQUIRED by NESIIS**</u>

Used with the QRD segment to further refine the content of a query.

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	20	ST	R	Y		Where subject filter
2	26	TS	O			When data start date/time
3	26	TS	O			When data end date/time
4	60	ST	O	Y		What user qualifier
5	60	ST	O	Y		Other query subject filter
6	12	ID	O	Y	0156	Which data/time qualifier
7	12	ID	O	Y	0157	Which date/time status qualifier
8	12	ID	O	Y	0158	Date/time selection qualifier
9	60	TQ	O	Y		When quantity/timing qualifier

Field Notes:

QRF-01 Identifies the department, system or subsystem to which the query pertains. NESIIS requires this field. A null/invalid value results in message rejection.

QRF-02 Data representing dates and times (registries do not value this component). This is an optional field.

QRF-03 Data representing dates and times (registries do not value this component). This is an optional field.

QRF-04 An identifier to further define characteristics of the data of interest. This is an optional field.

QRF-05 This field is used by registries to transmit up to ten separate search "keys". NESIIS requires this field and does NOT support repetition. The 2nd component (patient DOB) is minimally required by NESIIS. A null/invalid format results in message rejection. Format is YYYYMMDD.

Example:
```
QRF|MA0000|||||256946789~19900607~MA~MA99999999~88888888~KENNEDY^JACQUELINE^LEE~BOUVIER~8986667
25~KENNEDY^JOHN^FITZGERALD~822546618|
```

{ TC "VXR^03 – Response to Vaccination Query" **}VXR^V03 – Response TO Vaccination Query (Returning the Vaccination Record)**

When a patient has been uniquely identified (there is only one "match" to the query), the response to the query is a VXR^V03 message that is generated and sent back to the querying organization. NESIIS has imposed rules for when a VXR will be sent to the querying organization. Please see the following rules:

1. If an exact match is found in NESIIS AND the client's "Allow Sharing of Immunization Data" indicator is set to "NO", then that client will **NOT** be returned to the requestor unless one of the statements below pertains:
   - The organization requesting the query is the Master organization of a Parent organization owning the data **OR**
   - The organization requesting the query had originally set the "Allow Sharing of Immunization Data" indicator to NO.
2. If an exact match is found in NESIIS AND the client's "Allow Sharing of Immunization Data" indicator is set to "NO" (and none of the above rules apply), then a QCK response is sent instead of the VXR message.
3. NESIIS will only return eligible vaccines. NESIIS will not supply vaccines that are ineligible due to age restrictions, contraindications or other such rules. NESIIS will supply vaccines according to CDC/ACIP schedule.

{ TC "VXR Segment Detail" }VXR segment detail

Several segments make up the VXR message type. The following segments have been outlined previously in this document and will follow the same formatting for the VXR message type.

MSH, MSA, QRD, QRF, PID, PD1, NK1, PV1, RXA, RXR, OBX (Observation/Result Contraindications or Reactions)

In addition to supplying the querying organization with client specific demographic and immunization data (contained in the above segments), the VXR message also specifies "Observation/Result Vaccines Due Next" information. This information is supplied by generating a minimum of 3 OBX segments per 1 recommendation. NESIIS will report the Vaccination Schedule in the OBX segments through the specification of the LOINC code 30979-9 (Vaccines Due Next) and its sub-components in OBX-03. NESIIS requires specification of OBX-05 when OBX-03 is specified and valid. Further, NESIIS has superimposed a CE data type on the OBX-05 field. The corresponding observation values will be specified in OBX-05. Combinations are as follows:

OBX-03   **OBX-05**
30979-9   HL70292 (Codes for vaccines administered CVX)
30979-9&30980-7   Date Vaccine Due (NESIIS provides date recommended)
30979-9&30981-5   Earliest date to give (NESIIS provides)

Below you'll find an example of what a recommendation might look like in a VXR message response (see **bolded** OBX's below).

```
MSH|^~\&||NESIIS||QUERYING ORG|20040101101||VXR^V04|001|P^|2.4|||ER
MSA|AA|001|
QRD|20040120|R|I|001||||1^RD|01^LAST NAME^FIRST^MIDDLE^JR|VXI^VACCINE
INFORMATION^HL700048|^S11S||1|
QRF|MA000|||||~19900607~WI~STATEBIR#~MA#~KENNEDY^JACQUELINE^LEE~BOUVIER~898666725~KENNEDY^JOHN^
FITZGERALD~822546618~587421369~19630119~MN~MN99999999~88888888~DOE^JANE^ROSE~SMITH~999999999~S
MITH^JOHN^I~999999999|
PID|||1912484^^^^PI~1234567^^^^SR^||Trolly^Eliot^J^Sr^^|^^^^^|19090509|M||^^^^^|12017 N ROCK
INN RD^^ LINCOLN^NE^68509^USA^^^^|(402)321-9876^^^^^^^^||||||||||^^^^^|^^||||||
PD1|||||||||||||01^^^^^|Y||||A|||
NK1|1|Hamus^Eugene^J^Sr^^|SEL^SELF^HL70063|12017 N ROCK INN
RD^^LINCOLN^NE^68509^USA^^^^|(402)321-9876^^^^^^^^|
PV1||I|||||||||||||||||||||V00^20031208|
RXA|0|999|20021001|20021001|^^^90721^Diphtheria, Tetanus, Acellular Pertussis +
HIB^CPT|0|||^Health Assessment & Promotion (HAP)^Y|||||||||^^HL70227||||||200210141430
RXR|IM^^^^^|LA^^^^^
OBX|1|CE|30979-9^Vaccine due next^LN|1|20^DTAP^CVX^^^|
OBX|2|TS|30979-9&30980-7^Date vaccine due^LN|1|20040130^^^^^|
OBX|3|NM|30979-9&30981-5^Earliest date to give^LN|1|20040111^^^^^|
```

{ TC "VXX^V03 – Response to Vaccination Query" }VXX^V03
      Response TO Vaccination Query (Returning Multiple PID Matches)

When a health care provider participating in an immunization registry needs to obtain a complete patient vaccination record, a query (VXQ message) is sent to the immunization registry for the definitive (last updated) immunization record. When a query results in multiple patient matches, the VXX message response is generated. The VXX contains multiple clients and their demographic information but does not contain their vaccination information. The number of matches that NESIIS generates

will depend on what is specified in the first component of the incoming VXQ (QRD-07 Quantity Limited request field). NESIIS will interpret the quantity specified in this field as the maximum number of client matches that the requester desires.

For example:
If the query results in 100 matches and the original quantity specified in QRD-07 was 10, then NESIIS generates 10 PID (and if applicable, associated NK1) segments in the VXX response message.

NESIIS has imposed rules for when a VXX will be sent to the querying organization. Please see the following rules:

1. If the "Allow Sharing of Immunization Data" indicator is set to No (in NESIIS) for a client found matching the query, then that client will **NOT** be returned to the requestor unless one of the statements below pertains:
   - The requestor is the Master organization of the Parent organization owning the data OR
   - The organization requesting the query had originally set the "Allow Sharing of Immunization Data" to No.

The following scenarios outline when a VXX message will be sent back when multiple matches are found, but some of the matches have an "Allow Sharing of Immunization Data" indicator of "No". In all instances, the internal NESIIS ID for each client will be returned in PID-03. Providers can use this internal number in QRD-08 as part of a VXQ to return the specific client.

Scenario 1:
The following paragraph holds true, assuming that the VXQ has 0 in QRD-07 (meaning that the provider org. wants the maximum number of clients sent back).

If NESIIS matches 10 clients and only 2 of those clients have the "Allow Sharing of Immunization Data" indicator set to "Yes", then those 2 clients will be sent back in the VXX message and the remaining 8 clients (having indicators of "No") will not be sent back. The QRD-12 field (in the VXX) will reflect the total number of matches found in NESIIS (10 in our example) and the querying organization will need to assume that the 8 clients that were not returned had the "Allow Sharing of Immunization Data" indicator set to "No".

Example:
VXQ
```
MSH|^~\&||ZZ000||QUERYING ORG|20040101101||VXQ^V01|001|P^|2.4|||ER
QRD|20040120|R|I|01|||0^RD|01^SALAMI^STUART^S^^|VXI^VACCINE INFORMATION^HL700048|
^S11S||0|
QRF|ZZ000||||~19900607~|
```

VXX
```
MSH|^~\&||ZZ000||QUERYING ORG|20040101101||VXX^V02|001|P^|2.4|||ER
MSA|AA|001||0||0^Message Accepted^HL70357^^^
QRD|20040120|R|I|01|||0^RD|01^SALAMI^STUART^S^^|VXI^VACCINE INFORMATION^HL700048|
^S11S||10|
QRF|ZZ000||||~19900607~|
PID||123^^^^SR~^^^^PI^||SALAMI^BRAD^S^^|^^^^^|19900607|M||^^^^^|||
PID||456^^^^SR~^^^^PI^||SALAMI^CHARLES^^^^|^^^^^|19900706|M||^^^^^|||
NK1|1|SALAMI^CHARLES^^|SEL^SELF^HL70063|123 STREET
ADDRESS^^CITY^NE^55555^USA^^^^|(402)555-6666^^^^^^^^|
```

Scenario 2:
If NESIIS matches 2 clients and both have the "Allow Sharing of Immunization Data" indicator set to "No", then a QCK is generated. The QCK message will be comprised of the MSH, MSA and QAK segments. The MSA-01 field will have a value of "AR" (Application Reject). The MSA-03 field will display a message similar to "Client has an Allow Sharing of Immunization Data indicator = No". MSA-06 text will display, "Record not released".

Example:
VXQ
```
MSH|^~\&||ZZ000||QUERYING ORG|20040101101||VXQ^V01|007|P^|2.4|||ER
QRD|20040120|R|I|01|||0^RD|01^TEST INDICATOR^NO^|VXI^VACCINE INFORMATION^HL700048|
^S11S|||
QRF|ZZ000||||~19760707~|
```

```
QCK
MSH|^~\&||ZZ000||QUERYING ORG|20040101101||VXX^V02|007|P^|2.4|||ER
MSA|AR|007|Client has an Allow sharing of immunization data indicator = No||
500^Record Not Released^HL70357^^^|
QAK|01|NF|
```

{ TC "ACK – Acknowledgment Messages (with Errors)" }ACK
Acknowledgment Messages (with Errors)

ACK messages are generated for message rejections and for informational error messages. Three conditions that result in message rejection are:

1. Sequencing (i.e. a PID segment must follow an MSH segment.
2. Segment required fields contain no data.
3. Segment required fields contain invalid data.

An ACK is also generated when an informational error message has occurred, but it has not resulted in message rejection (i.e. NK1 segment contains no last name). In this case, the segment is ignored but the remainder of the message is processed. An ACK message is generated with a message informing the sender of the problem. The error message in the text does NOT include "Message Rejected". The ACK contains the MSH, MSA and ERR segments.

The MSH segment is generated according to normal HL7 processing guidelines. The MSA and ERR segments are detailed below:

{ TC "MSA – Message Acknowledgment Segment" }MSA
Message Acknowledgment Segment

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	2	ID	R		0008	Acknowledgment code
2	20	ST	R			Message control ID
3	80	ST	O			Text message
4	15	NM	O			Expected sequence number
5	1	ID	B		0102	Delayed acknowledgment type
9	100	CE	O			Error condition

Field Notes:

MSA-01 The acknowledgment code indicates whether the message was accepted, rejected, error, etc…This is a required field. NESIIS generates an "AE" for messages resulting in informational or rejection errors. An "AA" is generated for a simple acknowledgment
acceptance.

MSA-02 The message control ID is the unique ID that is sent by the sending system. This is a required field. It allows the sending system to associate each message with a response. In a response, this will be the same as the control ID that was sent in MSH-10 by the sending system.

MSA-03 This optional field further describes an error condition. When a message has been rejected, NESIIS generates "Message Rejection" as the first portion of the text describing the error message. Informational messages will not contain "Message Rejection".

MSA-04 This optional numeric field is used in the sequence number protocol. NESIIS does not generate this field.

MSA-05 Delayed Acknowledgement type. NESIIS does not generate this field.

MSA-06 Error Condition. NESIIS does not generate this field.

{ TC "ERR segment" }ERR
Error Segment

The Error segment (ERR) is used to add error comments to acknowledgment messages. If the message was rejected for functional reasons, this segment will locate the error and describe it using locally established codes. Field components include:
^<sequence (NM)>^<field position (NM)>^<code identifying error (CE)>

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	80	CM	R		0357	Error code and location

Example:
ACK
```
MSH|^~\&||ZZ000||QUERYING ORG|20040101101||VXQ^V01|001|P^|2.4|||ER
MSA|AE|001|Invalid relationship code.  Defaulting to Guardian|3||102^Invalid data
value^HL70357^^^
ERR|NK1^16^3^0
```

{ TC "QCK – Query General Acknowledgment" }QCK
Query General Acknowledgment
A QCK message is generated when NESIIS has processed the query message, but no match was found to the query parameters in the database. NESIIS does NOT generate this response message for anything other than no match found (for successful VXQ processing). Remember, error messages are reported through the use of the ACK response message; therefore, the optional [ERR] segment will never be generated for the QCK response message.

The MSH segment is generated according to normal HL7 processing guidelines. The MSA and QAK segments are detailed below:

{ TC "MSA – Message Acknowledgment Segment" }MSA
Message Acknowledgment Segment

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	2	ID	R		0008	Acknowledgment code
2	20	ST	R			Message control ID
3	80	ST	O			Text message
4	15	NM	O			Expected sequence number
5	1	ID	B		0102	Delayed acknowledgment type
9	100	CE	O			Error condition

Field Notes:
MSA-01 The acknowledgment code indicates whether the message was accepted, rejected, error, etc…This is a required field. NESIIS generates an AA for this field if no match is found in NESIIS. An AR is generated if a match is found, but the "Allow sharing of data" indicator is No.
MSA-02 The message control ID is the unique ID that is sent by the sending system. This is a required field. It allows the sending system to associate each message with a response. In a response, this will be the same as the control ID that was sent in MSH-10 by the sending system.
MSA-03 This optional field further describes an error condition. When a message has been rejected, NESIIS generates "Message Rejection" as the first portion of the text describing the error message. Informational messages will not contain "Message Rejection".
MSA-04 This optional numeric field is used in the sequence number protocol. NESIIS does not generate this field.
MSA-05 Delayed Acknowledgement type. NESIIS does not generate this field.
MSA-06 Error Condition. Refer to HL7 table 0357 for possible values.

{ TC "QAK – Query Acknowledgment Segment" }QAK
Query Acknowledgment Segment

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	32	ST			00696	Query Tag
2	2	ID	O		00708	Query response status

Field Notes:
QAK-01 This field is valued by the initiating system to identify the query and can be used to match response messages to the originating query. If it is valued, the responding system is required to echo it back as the first field in the QAK. NESIIS uses the value specified in the QRD-04 (of the VXQ) for the QAK-01 query tag value.
QAK-02 This field allows the responding system to return a precise response status. Refer to HL7 table 0208 for values. NESIIS only generates NF (no data found, no errors) for this field.

Example:
QCK

```
MSH|^~\&||ZZ000||QUERYING ORG|20040101101||VXX^V02|007|P^|2.4|||ER
MSA|AR|007|Client has an Allow sharing of immunization data indicator = No||
500^Record Not Released^HL70357^^^|
QAK|01|NF|
```

This concludes real-time processing.

{ TC "Appendix A - HL7 Data Types"\l }Appendix A -- HL7 Data Types

The following descriptions of HL7 data types are excerpted or adapted from the HL7 standard. See the field notes within each segment definition above on how to use data types in particular fields. Some data types have complex definitions much of which do not apply to NESIIS usage, and for these we omit much of the HL7 definition of the data type, referring instead to the field notes in the segment definitions.

{ TC "CE – Coded Element" }CE

Coded Element

```
Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate
           text (ST)> ^ <name of alternate coding system (ST)>
```

Example:

```
|F-11380^CREATININE^I9^2148-5^CREATININE^LN|
```

This data type transmits codes and the text associated with the code. To allow all six components of a CE data type to be valued, the maximum length of this data type must be at least 60.

Identifier (ST)

Sequence of characters (the code) that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

Text (ST)

Name or description of the item in question. E.g., myocardial infarction or X-ray impression. Its data type is string (ST).

Name of coding system (ST)

Each coding system is assigned a unique identifier. This component will serve to identify the coding scheme being used in the identifier component. The combination of the **identifier** and **name of coding system** components will be a unique code for a data item. Each system has a unique identifier. ASTM E1238-94, Diagnostic, procedure, observation, drug ID, and health outcomes coding systems are identified in the tables in Section 7.1.4 [of the full HL7 standard], "Coding schemes." Others may be added as needed. When an HL7 table is used for a CE data type, the *name of coding system* component is defined as *HL7nnnn* where *nnnn* is the HL7 table number.

Alternate components

These three components are defined analogously to the above for the alternate or local coding system. If the Alternate Text component is absent, and the Alternate Identifier is present, the Alternate Text will be taken to be the same as the Text component. If the Alternate Coding System component is absent, it will be taken to mean the locally defined system.

Note:	The presence of two sets of equivalent codes in this data type is semantically different from a repetition of a CE-type field. With repetition, several distinct codes (with distinct meanings) may be transmitted.

Note:	For HL7-defined tables which have not been adopted from some existing standard, the third component, "name of coding system," is constructed by appending the table number to the string "HL7." Thus, the field *RXR-2-site*, is a CE data type which refers to HL7 table number 0163. Its "name of coding system" component is "HL70163".

{ TC "CM - Composite" }CM

Composite

```
Components: <point of care (IS)> ^ <room (IS) ^ <bed (IS)> ^ <facility (HD) ^ <location status (IS) ^ <patient
           location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ < street address (ST)> ^ <other designation (ST)>
           ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type
           (ID)> ^ <other geographic designation (ST)>

Subcomponents of facility (HD): <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>
```

Example:

```
|^^^Valley Clinic|
```

Definition: The first component contains the inpatient or outpatient location at which the drug or treatment was administered (if applicable). The default (null) value is the current census location for the patient. Site-specific table. The first eight components have the same form as the first eight comonents of *PV1-3-assigned patient location*. The final eight components replace the ninth component of *PV1-3-assigned patient location* and represent the full address specification.

{ TC "CX – Extended Composite ID with Check Digit" }CX
>   Extended Composite ID with Check Digit

NESIIS uses this data type only for client identification in Patient Identification (PID) segments. See the field notes for values used for NESIIS.

{ TC "HD – Hierarchic Designator" }HD
>   Hierarchic Designator

NESIIS uses this data type only to identify sender and receiver in Message Header (MSH) segments. See the field notes for values used for NESIIS.

{ TC "ID – Coded Value for HL7 Defined Tables" }ID
>   Coded Value for HL7 Defined Tables

The value of such a field follows the formatting rules for a ST field except that it is drawn from a table of legal values. There shall be an HL7 table number associated with ID data types. Examples of ID fields include religion and sex. This data type should be used only for HL7 tables. The reverse is not true, since in some circumstances it is more appropriate to use the CE data type for HL7 tables.

{ TC "IS – Coded Value for User Defined Tables" }IS
>   Coded Value for User Defined Tables

The value of such a field follows the formatting rules for a ST field except that it is drawn from a site-defined (or user-defined) table of legal values. There shall be an HL7 table number associated with IS data types. An example of an IS field is the *Event reason code* defined in Section 3.3.1.4 [of the full HL7 standard], "Event reason code." This data type should be used only for user-defined tables. The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for user-defined tables.

{ TC "NM - Numeric" }NM
>   Numeric

A number represented as a series of ASCII numeric characters consisting of an optional leading sign (+ or -), the digits and an optional decimal point. In the absence of a sign, the number is assumed to be positive. If there is no decimal point the number is assumed to be an integer. Examples:

```
|999|

|-123.792|
```

Leading zeros, or trailing zeros after a decimal point, are not significant. For example, the following two values with different representations, "01.20" and "1.2", are identical. Except for the optional leading sign (+ or -) and the optional decimal point (.), no non-numeric ASCII characters are allowed. Thus, the value <12 should be encoded as a structured numeric (SN) (preferred) or as a string (ST) (allowed, but not preferred) data type.

{ TC "SI – Sequence ID" }SI
>   Sequence ID

A non-negative integer in the form of a NM field. See the field notes in segments using this data type for specifications of SI fields.

{ TC "ST – String Data" }ST
>   String Data

String data is left justified with trailing blanks optional. Any displayable (printable) ACSII characters (hexadecimal values between 20 and 7E, inclusive, or ASCII decimal values between 32 and 126), except the defined delimiter characters. Example:

```
|almost any data at all|
```

To include any HL7 delimiter character (except the segment terminator) within a string data field, use the appropriate HL7 escape sequence.

Usage note: the ST data type is intended for short strings (e.g., less than 200 characters). For longer strings the TX or FT data types should be used.

{ TC "TS – Time Stamp" }TS
>   Time Stamp

```
Format:  YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>
```

Contains the exact time of an event, including the date and time. The date portion of a time stamp follows the rules of a date field and the time portion follows the rules of a time field. The specific data representations used in the HL7 encoding rules are compatible with ISO 8824-1987(E).

In prior versions of HL7, an optional second component indicates the degree of precision of the time stamp (Y = year, L = month, D = day, H = hour, M = minute, S = second). This optional second component is retained only for purposes of backward compatibility.

By site-specific agreement, YYYYMMDD[HHMM[SS[.S[S[S[S]]]]]][+/-ZZZZ]^<degree of precision> may be used where backward compatibility must be maintained.

In the current and future versions of HL7, the precision is indicated by limiting the number of digits used, unless the optional second component is present. Thus, YYYY is used to specify a precision of "year," YYYYMM specifies a precision of "month," YYYYMMDD specifies a precision of "day," YYYYMMDDHH is used to specify a precision of "hour," YYYYMMDDHHMM is used to specify a precision of "minute," YYYYMMDDHHMMSS is used to specify a precision of seconds, and YYYYMMDDHHMMSS.SSSS is used to specify a precision of ten thousandths of a second. In each of these cases, the time zone is an optional component. Maximum length of the time stamp is 26. Examples:

```
|19760704010159-0600|   1:01:59 on July 4, 1976 in the Eastern
                        Standard Time zone.

|19760704010159-0500|   1:01:59 on July 4, 1976 in the Eastern
                        Daylight Saving Time zone.

|198807050000|          Midnight of the night extending from July 4 to
                        July 5, 1988 in the local time zone of the sender.

|19880705|              Same as prior example, but precision extends
                        only to the day.  Could be used for a
                        birthdate, if the time of birth is unknown.
```

The HL7 Standard strongly recommends that all systems routinely send the time zone offset but does not require it. All HL7 systems are required to accept the time zone offset, but its implementation is application specific. For many applications the time of interest is the local time of the sender. For example, an application in the Eastern Standard Time zone receiving notification of an admission that takes place at 11:00 PM in San Francisco on December 11 would prefer to treat the admission as having occurred on December 11 rather than advancing the date to December 12.

One exception to this rule would be a clinical system that processed patient data collected in a clinic and a nearby hospital that happens to be in a different time zone. Such applications may choose to convert the data to a common representation. Similar concerns apply to the transitions to and from daylight saving time. HL7 supports such requirements by requiring that the time zone information be present when the information is sent. It does not, however, specify which of the treatments discussed here will be applied by the receiving system.

{ TC "XAD – Address" }XAD

Address

```
Components: <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^
            <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic
            designation (ST)>^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation
            code (ID)>
```

Example:

```
|1234 Easy St.^Ste. 123^San Francisco^CA^95123^USA^B^^SF^^|
```

Street address (ST)

The street or mailing address of a person or institution.

Other designation (ST)

Second line of address. In general, it qualifies address. Examples: Suite 555 or Fourth Floor.

City (ST)
State or province (ST)

State or province should be represented by the official postal service codes for that country.

Zip or postal code (ST)

Zip or postal codes should be represented by the official codes for that country. In the US, the zip code takes the form 99999[-9999], while the Canadian postal code takes the form A9A-9A9.

Country (ID)

Defines the country of the address. See Table 0212.

Address type (ID)

Address type is optional.

Other geographic designation (ST)

Other geographic designation includes country, bioregion, SMSA, etc.

County/parish code (IS)

A code that represents the county in which the specified address resides. Refer to *user-defined table 0289 - County/parish*. When this component is used to represent the county (or parish), component 8 "other geographic designation" should not duplicate it (i.e., the use of "other geographic designation" to represent the county is allowed only for the purpose of backward compatibility, and should be discouraged in this and future versions of HL7).

Census tract (IS)

An optional code that represents the census track in which the specified address resides. NESIIS does not store this value.

{ TC "XCN – Extended Composite ID Number and Name for Persons" }XCN
Extended Composite ID Number and Name for Persons

NESIIS uses this data type only to identify Provider Organizations that administer immunizations. See the field notes for segment RXA.

{ TC "XPN – Extended Person Name" }XPN
Extended Person Name

```
Components: <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name
           (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^
           <name type code (ID) > ^ <name representation code (ID)>
```

Example:

```
|Smith&St^John^J^III^DR^PHD^L|
```

Family name (ST)
Last Name Prefix (ST)
Given name (ST)
Middle initial or name (ST)
Suffix (ST)

Used to specify a name suffix (e.g., Jr. or III).

Prefix (ST)

Used to specify a name prefix (e.g., Dr.).

Degree (ST)

Used to specify an educational degree (e.g., MD).

Name type code (ID)

A code that represents the type of name. Refer to *HL7 table 0200 - Name type* for valid values.

Table 0200 - Name type

Value	Description
A	Alias Name
L	Legal Name
D	Display Name
M	Maiden Name
C	Adopted Name

> Note: The legal name is the same as the current married name.

Name representation code (ID)

This component can be used when names are represented in ideographic or non-alphabetic systems. NESIIS ignores this component.

{ TC "XTN – Extended Telecommunication Number" }XTN

Extended Telecommunication Number

```
Components:   [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^
              <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^
              <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>
```

Example:

```
(415)555-3210^ORN^FX^
```

[(999)] 999-9999 [X99999] [C any text]

Defined as the TN data type, except that the length of the country access code has been increased to three.

Telecommunication use code (ID)

A code that represents a specific use of a telecommunication number. Refer *to HL7 table 0201 - Telecommunication use code* for valid values.

Table 0201 - Telecommunication use code

Value	Description
PRN	Primary Residence Number
ORN	Other Residence Number
WPN	Work Number
VHN	Vacation Home Number
ASN	Answering Service Number
EMR	Emergency Number
NET	Network (email) Address
BPN	Beeper Number

Telecommunication equipment type (ID)

A code that represents the type of telecommunication equipment. Refer *to HL7 table 0202 - Telecommunication equipment type* for valid values.Table 0202 - Telecommunication equipment type

Value	Description
PH	Telephone
FX	Fax
MD	Modem
CP	Cellular Phone
BP	Beeper
Internet	Internet Address: Use Only If Telecommunication Use Code Is NET
X.400	X.400 email address: Use Only If Telecommunication Use Code Is NET

Email address (ST)
Country code (NM)
Area/city code (NM)
Phone number (NM)
Extension (NM)
Any text (ST)

{ TC "Appendix B - HL7 Tables"\l }Appendix B -- HL7 Tables

The following tables give valid values for fields in the segments defined above, in the cases where the field definitions reference an HL7 table number. The tables are considered to be part of the HL7 standard, but those tables designated as type User have values determined by NESIIS.

Type	Table	Name	Value	Description
{ TC "Table: Sex" }HL7	0001	Sex		
	0001		F	Female
	0001		M	Male
	0001		O	Other
	0001		U	Unknown
{ TC "Table: Event Type" }HL7	0003	Event Type		
	0003		A31	ADT/ACK - Update patient information
	0003		V04	VXU - Unsolicited vaccination record update
{ TC "Table: Patient class" }HL7	0004	Patient class		
	0004		E	Emergency
	0004		I	Inpatient
	0004		O	Outpatient
	0004		P	Preadmit
	0004		R	Recurring
	0004		B	Obstetrics
{ TC "Table: Race" }HL7	0005	Race		
	0005		1002-5	American Indian or Alaska Native
	0005		2028-9	Asian
	0005		2076-8	Native Hawaiian or Other Pacific Islander
	0005		2054-5	Black or African-American
	0005		2106-3	White
	0005		2131-1	Other Race
	0005		Null	Unknown
{ TC "Table: Acknowledgment Code" }HL7	0008	Acknowledgment Code		
	0008		AA	Application Accept
	0008		AE	Application Error
	0008		AR	Application Reject
{ TC "Table: Relationship" }User	0063	Relationship		
	0063		ASC	Associate
	0063		BRO	Brother
	0063		CGV	Care giver
	0063		CHD	Child
	0063		DEP	Handicapped dependent
	0063		DOM	Life partner
	0063		EMC	Emergency contact
	0063		EME	Employee
	0063		EMR	Employer
	0063		EXF	Extended family
	0063		FCH	Foster Child

Type	Table	Name	Value	Description
	0063		FND	Friend
	0063		FTH	Father
	0063		GCH	Grandchild
	0063		GRD	Guardian
	0063		GRP	Grandparent
	0063		MGR	Manager
	0063		MTH	Mother
	0063		NCH	Natural child
	0063		NON	None
	0063		OAD	Other adult
	0063		OTH	Other
	0063		OWN	Owner
	0063		PAR	Parent
	0063		SCH	Stepchild
	0063		SEL	Self
	0063		SIB	Sibling
	0063		SIS	Sister
	0063		SPO	Spouse
	0063		TRA	Trainer
	0063		UNK	Unknown
	0063		WRD	Ward of court
{ TC "Table: Financial class" }HL7	0064	Financial class		
	0064		V00	VFC eligibility not determined/unknown
	0064		V01	Not VFC eligible - Insured
	0064		V02	VFC eligible – Medicaid/Medicaid Managed Care
	0064		V03	VFC eligible – Uninsured
	0064		V04	VFC eligible – American Indian/Alaskan Native
	0064		V05	VFC eligible – Federally Qualified Health Center Patient (under-insured)
	0064		NE01	Not VFC eligible – State-specific eligibility 'SVAP' (Not S-Chip plan)
	0064		NE02	Not VFC eligible – Local-specific eligibility 'Medicare'
{ TC "Table: Message Type" }HL7	0076	Message Type		
	0076		ACK	General acknowledgment message
	0076		ADR	ADT response
	0076		ADT	ADT message
	0076		QCK	Query general acknowledgment
	0076		VXQ	Query for vaccination record
	0076		VXX	Vaccination query response with multiple PID matches
	0076		VXR	Vaccination query record response
	0076		VXU	Unsolicited vaccination record update
	0076		ORU	Unsolicited observation results
{ TC "Table: Observation result status codes" }HL7	0085	Observation result status codes		
	0085		O	Order detail description only
{ TC	0103	Processing ID		

Type	Table	Name	Value	Description
"Table: Processing ID" }HL7				
	0103		P	Production
{ TC "Table: Version ID" }HL7	0104	Version ID		
	0104		2.3.1	Release 2.3.1 1999
	0104		2.4	Release 2.4 2000
{ TC "Table: Yes/No Indicator " }HL7	0136	Yes/No Indicator		
	0136		Y	Yes
	0136		N	No
{ TC "Table: Accept/ Application Acknowl edgment Conditio ns" }HL7	0155	Accept/Application Acknowledgment Conditions		
	0155		ER	Error/reject conditions only
{ TC "Table: Route of Administ ration" }HL7	0162	Route of Administration		
	0162		ID	Intradermal
	0162		IM	Intramuscular
	0162		IN	Intranasal
	0162		IV	Intravenous
	0162		PO	Oral
	0162		SC	Subcutaneous
	0162		TD	Transdermal
	0162		MP	Multiple Puncture (Small Pox)
{ TC "Table: Administ rative Site" }HL7	0163	Administrative Site		
	0163		LT	Left Thigh
	0163		LA	Left Arm
	0163		LD	Left Deltoid
	0163		LG	Left Gluteus Medius
	0163		LVL	Left Vastus Lateralis
	0163		LLFA	Left Lower Forearm
	0163		RA	Right Arm
	0163		RT	Right Thigh
	0163		RVL	Right Vastus Lateralis
	0163		RG	Right Gluteus Medius
	0163		RD	Right Deltoid
	0163		RLFA	Right Lower Forearm
{ TC "Table: Ethnic Group" }HL7	0189	Ethnic Group		

Type	Table	Name	Value	Description
	0189		2135-2	Hispanic
	0189		2186-5	Non-Hispanic
	0189		Null	Unknown
{ TC "Table: Identifier Type" }HL7	0203	Identifier Type		
	0203		BR	Birth Registry Number
	0203		MA	Medicaid Number
	0203		MC	Medicare Number
	0203		MR	Medical Record Number
	0203		PI	Patient Internal Identifier
	0203		PN	Person Number
	0203		PRN	Provider Number
	0203		PT	Patient External Identifier
	0203		RRI	Regional Registry ID
	0203		SR	State Registry Identifier
	0203		SS	Social Security Number
{ TC "Table: Nationality" }User	0212	Nationality		
	0212		CA	Canada
	0212		US	United States of America
{ TC "Table: Publicity Code" }User	0215	Publicity Code		
	0215		01	No reminder/recall
	0215		02	Yes reminder/recall – any method
{ TC "Table: Manufacturers of vaccines " }HL7	0227	Manufacturers of vaccines (code = MVX)		
	0227		AB	Abbott
	0227		AD	Adams
	0227		ALP	Alpha
	0227		AR	Armour (**Inactive** – use ZLB)
	0227		AVB	Aventis Behring (Inactive use ZLB)
	0227		AVI	Aviron
	0227		BA	Baxter (**Inactive** - use BAH)
	0227		BAH	Baxter Health Care
	0227		BAY	Bayer
	0227		BP	Berna (**Inactive** – use BPC)
	0227		BPC	Berna Products Corporation
	0227		CEN	Centeon L.L.C. (**Inactive** – use ZLB)
	0227		CHI	Chiron Corporation (**Inactive** – use NOV)
	0227		CMP	Celltech Medeva Pahm (**Inactive** – use NOV)
	0227		CNJ	Cangene Corporation
	0227		CON	Connaught (**Inactive** – use PMC)
	0227		CSL	CSL Biotherapies
	0227		DYN	DynPort Vaccine Company, LLC
	0227		EVN	Evans (**Inactive** – use NOV)
	0227		GRE	Greer
	0227		IAG	Immuno International AG (**Inactive** – use BAH)
	0227		IM	Merieux (**Inactive** – Use PMC)

Type	Table	Name	Value	Description	
	0227		IUS	Immuno-US	
	0227		JPN	The Research foundation for Microbial Diseases of Osaka U.	
	0227		KGC	Korea Green Cross	
	0227		LED	Lederle (**Inactive** – use WAL)	
	0227		MA	Massachusetts Public Health (**Inactive**-Use MBL)	
	0227		MBL	Massachusetts Biologic Laboratories	
	0227		MED	MedImmune	
	0227		MIL	Miles (**Inactive** – use BAY)	
	0227		MIP	BioPort	
	0227		MSD	Merck	
	0227		NAB	North American Biologicals, Inc.	
	0027		NAV	North American Vaccine (**Inactive** – use BAH)	
	0227		NYB	New York Blood Center	
	0227		NOV	Novartis	
	0227		NVX	Novavax, Inc	
	0227		OTC	Organon Teknika	
	0227		ORT	Ortho	
	0227		PD	Parkdale Pharmaceuticals (formerly Parke Davis)	
	0227		PFR	Pfizer, Inc.	
	0227		PMC	Aventis Pasteur Inc. (formerly Pasteur Merieux Connaught)	
	0227		PRX	Praxis Biologics (**Inactive** – use WAL)	
	0227		PWJ	Powderject Pharmaceutical	
	0227		SCL	Sclavo	
	0227		SOL	Solvay Pharmaceuticals	
	0227		SKB	GlaxoSmithKline	
	0227		SI	Swiss Serum and Vaccine Inst. (**Inactive** – use BPC)	
	0227		TAL	Talecris Biotherapeutics (includes Bayer Biologicals)	
	0227		USA	United States Army Medical Research	
	0227		VXG	VaxGen	
	0227		WA	Wyeth-Ayerst (**Inactive** – use WAL)	
	0227		WAL	Wyeth-Ayerst (**Inactive** – use PFR)	
	0227		ZLB	ZLB Behring (includes Aventis Behring and Armour Pharmaceutical Co)	
	0227		OTH	Other	
	0227		UNK	Unknown manufacturer	
{ TC "Table: County/ Parish (Wisconsin only)" **}**User	0289	County/parish (Nebraska & some surrounding counties)			
	0289	*Nebraska Counties*	NE001	Nebraska	Adams
	0289		NE003	Nebraska	Antelope
	0289		NE005	Nebraska	Arthur
	0289		NE007	Nebraska	Banner
	0289		NE009	Nebraska	Blaine
	0289		NE011	Nebraska	Boone
	0289		NE013	Nebraska	Box Butte
	0289		NE015	Nebraska	Boyd
	0289		NE017	Nebraska	Brown
	0289		NE019	Nebraska	Buffalo
	0289		NE021	Nebraska	Burt
	0289		NE023	Nebraska	Butler
	0289		NE025	Nebraska	Cass

Type	Table	Name	Value	Description	
	0289		NE027	Nebraska	Cedar
	0289		NE029	Nebraska	Chase
	0289		NE031	Nebraska	Cherry
	0289		NE033	Nebraska	Cheyenne
	0289		NE035	Nebraska	Clay
	0289		NE037	Nebraska	Colfax
	0289		NE039	Nebraska	Cuming
	0289		NE041	Nebraska	Custer
	0289		NE043	Nebraska	Dakota
	0289		NE045	Nebraska	Dawes
	0289		NE047	Nebraska	Dawson
	0289		NE049	Nebraska	Deuel
	0289		NE051	Nebraska	Dixon
	0289		NE053	Nebraska	Dodge
	0289		NE055	Nebraska	Douglas
	0289		NE057	Nebraska	Dundy
	0289		NE059	Nebraska	Fillmore
	0289		NE061	Nebraska	Franklin
	0289		NE063	Nebraska	Frontier
	0289		NE065	Nebraska	Furnas
	0289		NE067	Nebraska	Gage
	0289		NE069	Nebraska	Garden
	0289		NE071	Nebraska	Garfield
	0289		NE073	Nebraska	Gosper
	0289		NE075	Nebraska	Grant
	0289		NE077	Nebraska	Greeley
	0289		NE079	Nebraska	Hall
	0289		NE081	Nebraska	Hamilton
	0289		NE083	Nebraska	Harlan
	0289		NE085	Nebraska	Hayes
	0289		NE087	Nebraska	Hitchcock
	0289		NE089	Nebraska	Holt
	0289		NE091	Nebraska	Hooker
	0289		NE093	Nebraska	Howard
	0289		NE095	Nebraska	Jefferson
	0289		NE097	Nebraska	Johnson
	0289		NE099	Nebraska	Kearney
	0289		NE101	Nebraska	Keith
	0289		NE103	Nebraska	Keya Paha
	0289		NE105	Nebraska	Kimball
	0289		NE107	Nebraska	Knox
	0289		NE109	Nebraska	Lancaster
	0289		NE111	Nebraska	Lincoln
	0289		NE113	Nebraska	Logan
	0289		NE115	Nebraska	Loup
	0289		NE117	Nebraska	McPherson
	0289		NE119	Nebraska	Madison
	0289		NE121	Nebraska	Merrick
	0289		NE123	Nebraska	Morrill
	0289		NE125	Nebraska	Nance
	0289		NE127	Nebraska	Nemaha
	0289		NE129	Nebraska	Nuckolls
	0289		NE131	Nebraska	Otoe
	0289		NE133	Nebraska	Pawnee
	0289		NE135	Nebraska	Perkins

Type	Table	Name	Value	Description	
	0289		NE137	Nebraska	Phelps
	0289		NE139	Nebraska	Pierce
	0289		NE141	Nebraska	Platte
	0289		NE143	Nebraska	Polk
	0289		NE145	Nebraska	Red Willow
	0289		NE147	Nebraska	Richardson
	0289		NE149	Nebraska	Rock
	0289		NE151	Nebraska	Saline
	0289		NE153	Nebraska	Sarpy
	0289		NE155	Nebraska	Saunders
	0289		NE157	Nebraska	Scotts Bluff
	0289		NE159	Nebraska	Seward
	0289		NE161	Nebraska	Sheridan
	0289		NE163	Nebraska	Sherman
	0289		NE165	Nebraska	Sioux
	0289		NE167	Nebraska	Stanton
	0289		NE169	Nebraska	Thayer
	0289		NE171	Nebraska	Thomas
	0289		NE173	Nebraska	Thurston
	0289		NE175	Nebraska	Valley
	0289		NE177	Nebraska	Washington
	0289		NE179	Nebraska	Wayne
	0289		NE181	Nebraska	Webster
	0289		NE183	Nebraska	Wheeler
	0289		NE185	Nebraska	York
	0289		CO075	Colorado	Logan
	0289		CO095	Colorado	Phillips
	0289		CO115	Colorado	Sedgwick
	0289		CO123	Colorado	Weld
	0289		CO125	Colorado	Yuma
	0289		IA071	Iowa	Fremont
	0289		IA085	Iowa	Harrison
	0289		IA129	Iowa	Mills
	0289		IA133	Iowa	Monona
	0289		IA149	Iowa	Plymouth
	0289		IA155	Iowa	Pottawattamie
	0289		IA193	Iowa	Woodbury
	0289		KS013	Kansas	Brown
	0289		KS023	Kansas	Cheyenne
	0289		KS039	Kansas	Decatur
	0289		KS089	Kansas	Jewell
	0289		KS117	Kansas	Marshall
	0289		KS123	Kansas	Mitchell
	0289		KS131	Kansas	Nemaha
	0289		KS137	Kansas	Norton
	0289		KS147	Kansas	Phillips
	0289		KS153	Kansas	Rawlins
	0289		KS157	Kansas	Republic
	0289		KS183	Kansas	Smith
	0289		KS201	Kansas	Washington
	0289		MO005	Missouri	Atchison
	0289		MO087	Missouri	Holt
	0289		SD007	South Dakota	Bennett
	0289		SD009	South Dakota	Bon Homme
	0289		SD023	South Dakota	Charles Mix
	0289		SD027	South Dakota	Clay
	0289		SD047	South Dakota	Fall River

Type	Table	Name	Value	Description	
	0289		SD053	South Dakota	Gregory
	0289		SD113	South Dakota	Shannon
	0289		SD121	South Dakota	Todd
	0289		SD123	South Dakota	Tripp
	0289		SD135	South Dakota	Yankton
	0289		WY015	Wyoming	Goshen
	0289		WY021	Wyoming	Laramie
	0289		WY027	Wyoming	Niobrara
	0289		WY031	Wyoming	Platte
{ TC "Table: Immunization Information Source" }NIP	NIP001	Immunization Information Source			
	NIP001		00	New Immunization Record	
	NIP001		01	Historical Information	
{ TC "Table: Substance Refusal Reason" }NIP	NIP002	Substance Refusal Reason			
	NIP002		00	Parental Refusal	
	NIP002		01	Religious Exemption	
{ TC "Table: Contraindications, Precautions" }NIP	NIP004	Contraindications, Precautions			
	NIP004		03	Allergy to baker's yeast (anaphylactic)	
	NIP004		04	Allergy to egg ingestion (anaphylactic)	
	NIP004		05	Allergy to gelatin (anaphylactic)	
	NIP004		LA	Allergy to latex	
	NIP004		06	Allergy to neomycin (anaphylactic)	
	NIP004		07	Allergy to streptomycin (anaphylactic)	
	NIP004		08	Allergy to thimerosal (anaphylactic)	
	NIP004		09	Allergy to previous dose of this vaccine or to any of its unlisted vaccine components (anaphylactic)	
	NIP004		10	Anaphylactic (life-threatening) reaction of previous does of this vaccine	
	NIP004		11	Collapse or shock like state within 48 hours of previous dose of DTP/DTaP	
	NIP004		12	Convulsions (fits, seizures) within 3 days of previous dose of DTP/DTaP	
	NIP004		13	Persistent, inconsolable crying lasting 3 hours within 48 hours of previous dose of DTP/DTaP	
	NIP004		14	Current diarrhea, moderate to severe	
	NIP004		15	Encephalopathy within 7 days of previous dose of DTP	
	NIP004		16	Current fever with moderate-to-severe illness	
	NIP004		17	Fever of 40.5 C (105 F) within 48 hours of previous dose of DTP/DTaP	
	NIP004		18	Gullain-Barre syndrome (GBS) within 6 weeks of previous dose of DTP/DTaP	
	NIP004		19	HIV infection (in household contact)	
	NIP004		20	HIV infection (in recipient)	
	NIP004		21	Current acute illness, moderate to severe (with or without fever) (e.g. diarrhea, otitis media, vomiting)	
	NIP004		22	Chronic illness (e.g. chronic gastrointestinal disease)	
	NIP004		23	Immune globulin (IG) administration, recent or	

Type	Table	Name	Value	Description
				simultaneous
	NIP004		24	Immunity: diphtheria
	NIP004		25	Immunity: Haemophilus influenzae type B (Hib)
	NIP004		HEPA_I	Immunity: hepatitis A
	NIP004		26	Immunity: hepatitis B
	NIP004		27	Immunity: measles
	NIP004		28	Immunity: mumps
	NIP004		29	Immunity: pertussis
	NIP004		30	Immunity: poliovirus
	NIP004		31	Immunity: rubella
	NIP004		32	Immunity: tetanus
	NIP004		33	Immunity: varicella (chicken pox)
	NIP004		33A	History of Varicella
	NIP004		34	Immunodeficiency (family history)
	NIP004		35	Immunodeficiency (household contact)
	NIP004		36	Immunodeficiency (hematologic and solid tumors, congenital immunodeficiency, lon-term immunosuppressive therapy, including steroids) (in recipient)
	NIP004		37	Neurologic disorders, underlying (including seizure disorders, cerebral palsy, and developmental delay)
	NIP004		38	Otitis media (ear infection) moderate to severe (with or without fever)
	NIP004		MA	Physician documented exemption due to medical reasons for DTP/aP vaccine group
	NIP004		MB	Physician documented exemption due to medical reasons for Pediatric DT vaccine
	NIP004		MC	Physician documented exemption due to medical reasons for Hepatitis A vaccine group
	NIP004		MD	Physician documented exemption due to medical reasons for Hepatitis B vaccine group
	NIP004		ME	Physician documented exemption due to medical reasons for Hib vaccine group
	NIP004		MF	Physician documented exemption due to medical reasons for MMR vaccine group
	NIP004		MG	Physician documented exemption due to medical reasons for Meningococcal vaccine group
	NIP004		MH	Physician documented exemption due to medical reasons for Pneumococcal vaccine group
	NIP004		MI	Physician documented exemption due to medical reasons for Polio vaccine group
	NIP004		MJ	Physician documented exemption due to medical reasons for Rotavirus vaccine group
	NIP004		MK	Physician documented exemption due to medical reasons for Adult Td vaccine group
	NIP004		ML	Physician documented exemption due to medical reasons for Varicella vaccine group

Type	Table	Name	Value	Description
	NIP004		39	Pregnancy (in recipient)
	NIP004		40	Thrombocytopenia
	NIP004		41	Thrombocytopenic purpura (history)
	NIP004		RABEXP	Client has been exposed to Rabies
{ TC "Table: Event Conseq uence" }NIP	NIP005	Event Consequence		
	NIP005		D	Patient Died
	NIP005		L	Life threatening illness
	NIP005		E	Required emergency room/doctor visit
	NIP005		H	Required hospitalization
	NIP005		P	Resulted in prolongation of hospitalization
	NIP005		J	Resulted in permanent disability
{ TC "Table: Patient Registry Status" }NIP	NIP006	Patient Registry Status		
	NIP006		A	Active
	NIP006		N	Inactive
	NIP006		P	Permanently inactive (dead)
{ TC "Table: Reaction Codes" }NESIIS	NESIIS001	Reaction Codes		
	NESIIS001		PERTCONT	Pertussis allergic reaction
	NESIIS001		TETCONT	Tetanus allergic reaction
	NESIIS001		HYPOTON	Hypotonic-hyporesponsive collapse within 48 hours of immunization
	NESIIS001		SEIZURE	Seizure occurring within 3 days
	NESIIS001		CRYING	Persistent crying lasting >= 3 hours within 48 hours of immunization
	NESIIS001		FEVER105	Temperature >= 105 (40.5 C) within 48 hours of immunization

{ TC "Table: Vaccine Group Code" }NESIIS	WVGC	Vaccine Group Code (WVGC)		
	WVGC		Adeno	Adeno
	WVGC		Anthrax	Anthrax
	WVGC		BCG	BCG
	WVGC		Cholera	Cholera
	WVGC		Diphtheria	Diphtheria Antitoxin
	WVGC		DTP/aP	Diphtheria, Tetanus, Acellular Pertussis (< 7 years old)
	WVGC		Encephalitis	Encephalitis
	WVGC		Flu H1N1-09	Novel Influenza-H1N1-09
	WVGC		HepA	Hepatitis A
	WVGC		HepB	Hepatitis B
	WVGC		Hib	Hib
	WVGC		HPV	Human Papilloma Virus
	WVGC		Ig	Ig
	WVGC		Influenza	Influenza
	WVGC		Lyme	Lyme
	WVGC		Measles	Measles Virus Vaccine
	WVGC		MMR	Measles, Mumps, Rubella
	WVGC		Meningo	Meningitis
	WVGC		Mumps	Mumps Virus Vaccine
	WVGC		Pertussis	Pertussis
	WVGC		Plague	Plague
	WVGC		Pneumococcal	Pneumonia Conjugate
	WVGC		Pneumo-Poly	Pneumonia Polysaccharide
	WVGC		Polio	Poliomyelitis
	WVGC		Rabies	Rabies
	WVGC		Rotavirus	Rotavirus
	WVGC		Rubella	Rubella Virus Vaccine
	WVGC		Tetanus	Tetanus
	WVGC		Td	Tetanus Diphtheria
	WVGC		Tdap	Diphtheria, Tetanus, Acellular Pertussis (=> 7 years old)
	WVGC		Typhoid	Typhoid
	WVGC		Smallpox	Vaccinia
	WVGC		Varicella	Varicella
	WVGC		Yellow Fever	Yellow Fever
	WVGC		Zoster	Zoster
{ TC "Table: Vaccine Trade Name" }NESIIS	WVTN	Vaccine Trade Name (WVTN)		
	WVTN		Acel-Imune	DTaP
	WVTN		ActHib	Hib-PRP-T
	WVTN		Adacel	TdaP > 7 years
	WVTN		Adeno T4	Adeno T4
	WVTN		Adeno T7	Adeno T7
	WVTN		Afluria	Influenza
	WVTN		Afluria, Preservative-free	Preservative-Free Influenza
	WVTN		Anthrax	Anthrax
	WVTN		Attenuvax	Measles
	WVTN		BabyBIG	Botulism

	WVTN		BayTet	TIg
	WVTN		BCG-Cancer	BCG-BC
	WVTN		BCG-TB	BCG-TB
	WVTN		Biavax II	Rubella-Mumps
	WVTN		BIG	Botulism
	WVTN		Boostrix	TdaP > 7 years
	WVTN		Botulinum-antitoxin	Botulinum-antitoxin
	WVTN		Botulism	Botulism
	WVTN		Certiva	DTaP
	WVTN		Cholera-I	Cholera-Inject
	WVTN		Cholera-O	Cholera-Oral
	WVTN		CMV-IgIV	CMV-IgIV
	WVTN		Comvax	HepB-Hib
	WVTN		DAPTACEL	DTaP,5 pertussis antigens
	WVTN		DECAVAC	Td , preservative free
	WVTN		Diphtheria	Diphtheria
	WVTN		Diphtheria-antitoxin	Diphtheria-antitoxin
	WVTN		Dryvax	Smallpox
	WVTN		DT	DT-Peds
	WVTN		DTP	DTP
	WVTN		Engerix-B Adult	HepB-Adult
	WVTN		Engerix-B dialysis	HepB-Dialysis 4 dose
	WVTN		Engerix-B Peds	HepB-Peds
	WVTN		Flebogamma	IgIV
	WVTN		Flu-Imune	Influenza
	WVTN		Flu-Mist	FLU-Nasal
	WVTN		Flu-Shield	Influenza
	WVTN		Fluogen	Influenza
	WVTN		Fluvirin	Influenza
	WVTN		Fluvirin, Preservative-free	Preservative-Free Influenza
	WVTN		Fluzone	Influenza
	WVTN		Fluzone, Preservative-free	Preservative-Free Influenza
	WVTN		Gardasil	HPV, Quadrivalent
	WVTN		H1N1 Flu-Mist	Novel Influenza-H1N1-09, nasal
	WVTN		H1N1 Afluria	Novel Influenza-H1N1-09
	WVTN		H1N1 Afluria, P-free	Novel Influenza-H1N1-09, preserve-free
	WVTN		H1N1 Fluvirin	Novel Influenza-H1N1-09
	WVTN		H1N1 Fluvirin, P-free	Novel Influenza-H1N1-09, preserve-free
	WVTN		H1N1 Fluzone	Novel Influenza-H1N1-09
	WVTN		H1N1 Fluzone, P-free	Novel Influenza-H1N1-09, preserve-free
	WVTN		Havrix-Adult	HepA-Adult
	WVTN		Havrix-Peds 2 Dose	HepA-Ped 2 Dose
	WVTN		Havrix-Peds 3 Dose	HepA-Peds
	WVTN		HBIg	HBIg
	WVTN		Hib-TITER	Hib-HbOC
	WVTN		Hiberix	Hib-PRP-T
	WVTN		Ig	Ig
	WVTN		IgIV	IgIV
	WVTN		Imovax Rabies ID	Rabies-ID
	WVTN		Imovax Rabies IM	Rabies-IM
	WVTN		Infanrix	DTaP
	WVTN		IPOL	Polio-Inject
	WVTN		Ixiaro	Japanese encephalitis-IM
	WVTN		JE-Vax	Japanese encephalitis-SC
	WVTN		Kinrix	DTaP-IPV

	WVTN		LYMErix	Lyme
	WVTN		M-R-VAX	Measles-Rubella
	WVTN		Measles	Measles
	WVTN		Measles-Rubella (MERU)	Measles-Rubella
	WVTN		Menactra	Meningococcal conjugate vaccine
	WVTN		MENOMUNE	Meningococcal polysaccharide vaccine
	WVTN		Meruvax II	Rubella
	WVTN		MMR II	MMR
	WVTN		MMRV	MMRV
	WVTN		Mumps	Mumps
	WVTN		Mumps-Rubella (MURU)	Rubella-Mumps
	WVTN		Mumpsvax	Mumps
	WVTN		OmniHib	Hib-PRP-T
	WVTN		ORIMUNE	Polio-Oral
	WVTN		Pediarix	DTAP/Polio/Hep B
	WVTN		PedvaxHIB	Hib-OMP
	WVTN		Pentacel	DtaP-Hib-IPV
	WVTN		Pertussis	Pertussis
	WVTN		Plague	Plague
	WVTN		Pneumovax 23	Pneumococcal 23
	WVTN		PNU-IMUNE 23	Pneumococcal 23
	WVTN		Prevnar	Pneumo-Conjugate
	WVTN		Prevnar 13	Pneumo-Conjugate 13
	WVTN		ProHIBit	Hib-PRP-D
	WVTN		ProQuad	MMRV
	WVTN		RabAvert	Rabies-IM
	WVTN		Recombivax Peds	HepB-Peds
	WVTN		Recombivax-Adult	HepB-Adult
	WVTN		Recombivax-Dialysis	HepB-Dialysis 4 dose
	WVTN		Rho(D)Full	Rho(D)Full
	WVTN		Rho(D)IV	Rho(D)IV
	WVTN		Rho(D)Mini	Rho(D)Mini
	WVTN		RIg	RIg
	WVTN		RIg-HT	RIg-HT
	WVTN		RotaShield	Rotavirus, Tetravalent
	WVTN		RotaTeq	Rotavirus, Pentavalent
	WVTN		Rotarix	Rotavirus, monovalent
	WVTN		RSV-IgIM	RSV-IgIM
	WVTN		RSV-IgIV	RSV-IgIV
	WVTN		Rubella	Rubella
	WVTN		Td	Td
	WVTN		Td P-free	Td preservative free
	WVTN		Tetramune	DTP-Hib
	WVTN		TIg	TIg
	WVTN		TriHIBit	DTaP-Hib
	WVTN		Tripedia	DTaP
	WVTN		TT	Tetanus
	WVTN		Twinrix	HepA-HepB Adult
	WVTN		Typhim Vi	Typhoid-ViCPs
	WVTN		Typhoid	Typhoid-HP
	WVTN		Typhoid-AKD	Typhoid-AKD
	WVTN		Vaccinia (smallpox), diluted	Vaccinia (smallpox), diluted
	WVTN		Vaccinia immune globulin VIG	Vaccinia immune globulin VIG
	WVTN		VAQTA-Adult	HepA-Adult
	WVTN		VAQTA-Peds 2 Dose	HepA-Ped 2 Dose

	WVTN		Varivax	Varicella
	WVTN		Vivotif Berna/Ty21a	Typhoid-Oral
	WVTN		VZIg	VZIg
	WVTN		YF-VAX	Yellow Fever
	WVTN		Zostavax	Zoster (shingles), live

{ TC "Table: CPT and CVX Codes" }CPT Codes (WCPT) and CVX Codes (292)

CPT	CVX	Group	Vaccine	Trade Name	Description	MFG
90476	54	Adeno	Adeno T4	Adeno T4	Adenovirus type 4, live oral	WAL
90477	55		Adeno T7	Adeno T7	Adenovirus type 7, live oral	WAL
	82		Adeno, NOS		Recorded as CVX 54	
90581	24	Anthrax	Anthrax	Anthrax	Anthrax	MIP
90585	19	BCG	BCG-TB	BCG-TB	Bacillus Calmette-Guerin TB	OTC
90586			BCG-BC	BCG-BC	Bacillus Calmette-Guerin bladder cancer	OTC
90728			BCG, NOS		BCG, NOS	
90725	26	Cholera	Cholera-Injectable	Cholera-I	Cholera injectable	NOV
90592			Cholera-Oral	Cholera-O	Cholera Oral	NOV
90719		Diphtheria	Diphtheria	Diphtheria	Diphtheria	PD
90700	20	DTP/aP	DTaP	Acel-Imune	Diphtheria, tetanus, acellular pertussis	WAL
				Certiva		BAH
				Infanrix		SKB
				Tripedia		PMC
90701	01		DTP	DTP	Diphtheria, tetanus, whole cell pertussis	PMC
90702	28		DT	DT	Diphtheria tetanus pediatric	PMC
90720	22		DTP-Hib	Tetramune	DTP – Hib combination	WAL
90721	50		DTaP-Hib	TriHIBit	DtaP-Hib combination	PMC
90723	110		DTAP-HepB-Polio	Pediarix	DTAP-HepB-Polio combination	SKB
90698	120		DtaP-Hib-IPV	Pentacel	DtaP-Hib-IPV combination	PMC
90696	130		DTaP-IPV	Kinrix	DTaP-IPV combination	SKB
	106		DTAP, 5 pertussis antigens	DAPTACEL	Diphtheria, tetanus, acellular pertussis, 5 antigens	PMC
	107		DTaP, NOS		Recorded as CVX 20	
	102		DTP-HIB-Hep B		DTP-HIB Hep B vaccine	
90663	125	Flu H1N1-09	Novel Influenza-H1N1-09, nasal	H1N1 Flu-Mist	Novel Influenza-H1N1-09, live virus for nasal administration	MED
	126		Novel Influenza-H1N1-09, preserve-free	H1N1 Afluria, P-free	Novel influenza-H1N1-09, preservative-free, injectable	CSL
				H1N1 Fluvirin, P-free		NOV
				H1N1 Fluzone, P-free		PMC
	127		Novel Influenza-H1N1-09	H1N1 Afluria	Novel influenza-H1N1-09, injectable	CSL
				H1N1 Fluvirin		NOV
				H1N1 Fluzone		PMC
	128		Novel Influenza-H1N1-09 all formulations		Novel Influenza-H1N1-09, All formulations	
90655	15	Influenza	Influenza, Perservative-Free	Fluvirin, Preservative-Free	Seasonal influenza preservative free	NOV
				Fluzone, Preservative-Free		PMC
				Afluria, Preservative-Free		CSL
90656				Fluvirin, Preservative-Free		NOV
				Fluzone, Preservative-Free		PMC
				Afluria, Preservative-Free		CSL
90657			Influenza	Flu-Immune	Seasonal influenza split virus	WAL
				Flu-Shield		WAL
				Fluzone		PMC
				Afluria		CSL
				Fluvirin		NOV
				Fluogen		PD
				Fluarix		SKB
90658				Flu-Immune		WAL
				Flu-Shield		WAL
				Fluzone		PMC
				Afluria		CSL
				Fluvirin		NOV
				Fluogen		PD
				Fluarix		SKB
90659	16		Influenza, Whole virus		Seasonal influenza whole virus	
90660	111		Flu-nasal	Flu-Mist	Seasonal influenza live, for intranasal use	WAL
90724	88		Influenza, NOS	Flu-Deleted	Seasonal influenza, NOS	
			Flu-Unspecified			
90632	52	HepA	HepA adult	Havrix adult	Hepatitis A adult	SKB

CPT	CVX	Group	Vaccine	Trade Name	Description	MFG
				VAQTA adult		MSD
90633	83		HepA ped-2 dose	Havrix ped/adol 2 dose	Hepatitis A pediatric/adolescent 2 dose	SKB
				VAQTA ped-2		MSD
90634	84		HepA ped-3 dose	Havrix ped/adol 3 dose	Hepatitus A pediatric/adolescent 3 dose	SKB
						MSD
90636	104		HepA-HepB Adult	Twinrix	Hepatitus A & Hepatitus B adult	SKB
90730	85		Hep A, NOS		Hep A, NOS	
	31		Hep A-peds, NOS		Recorded as CVX 85	
90636	104	HepB	HepA-HepB Adult	Twinrix	Hepatitus A & Hepatitus B adult	SKB
90723	110		DTAP-HepB-Polio	Pediarix	DTAP-HepB-Polio combination	SKB
90731	45		Hep B, NOS		Hep B, NOS	
90740	44		Hep B-dialysis 3 dose		Hepatitis B Dialysis 3 dose	
90743	43		HepB adult	Recombivax-Adult	Hepatitis B adult dose 1ml	MSD
				Engerix-B_Adult		SKB
90744	08		HepB pediatric	Recombivax-Peds	Hepatitis B pediatric/adolescent .5ml	MSD
				Engerix-B_Peds		SKB
90745	42		Hep B, adolescent/high risk infant		Hep B, adolescent/high risk infant	
90746	43		HepB adult	Recombivax-Adult	Hepatitis B adult dose 1ml	MSD
				Engerix-B_Adult		SKB
90747	44		HepB-dialysis 4 dose	Recombivax-Dialysis	Hepatitis B Dialysis 4 dose	MSD
				Engerix-B dialysis		SKB
90748	51		HepB-Hib	Comvax	HepB-Hib Combination	MSD
			HepB-Unspecified			
90645	47	Hib	Hib-HbOC	HibTITER	Hemophilus influenza b HbOC 4 dose	WAL
90646	46		Hib-PRP-D	ProHIBit	Hemophilus influenza b PRP-D booster	PMC
90647	49		Hib-OMP	PedvaxHIB	Hemophilus influenza b OMP 3 dose	MSD
90648	48		Hib-PRP-T	OmniHib	Hemophilus influenza b PRP-T 4 dose	PMC
				ActHib		PMC
				Hiberix		SKB
90720	22		DTP-Hib	Tetramune	DTP – Hib combination	WAL
90721	50		DtaP-Hib	TriHIBit	DtaP-Hib combination	PMC
90737	17				Hib,NOS	
90748	51		HepB-Hib	Comvax	HepB-Hib combination	MSD
90698	120		DtaP-Hib-IPV	Pentacel	DtaP-Hib-IPV combination	PMC
			Hib-Unspecified			
90649	62		HPV, Quadrivalent	Gardasil	Human Papilloma Virus	MSD
90281	86	Ig	Ig	Ig	Ig human	
90283	87		IgIV	IgIV	Ig IV human	
				Flebogamma		
90287	27		Botulinum-antitoxin	Botulinum-antitoxin	Botulinum antitoxin equine	
90288			Botulism	BabyBIG	Botulism Immune Globulin	
				Botulism		
				BIG		
90291	29		CMV-IgIV	CMV-IgIV	Cytomegalovirus Ig IV human	
90399			Ig	Ig	Unlisted immune globulin	
90296	12		Diphtheria-antitoxin	Diphtheria-antitoxin	Diphtheria antitoxin, equine	
90371	30		HBIg	HBIg	Hepatitis B Ig human	
90375	34		RIg	Rig	Rabies Ig human	
90376	34		RIg-HT	RIg-HT	Rabies Ig heat treated human	
90378	93		RSV-IgIM	RSV-IgIM	Respiratory syncytial virus Ig	
90379	71		RSV-IgIV	RSV-IgIV	Respiratory syncytial virus Ig IV	
90384			Rho(D)Full	Rho(D)Full	Rho(D)Ig Rhlg human full-dose	
90385			Rho(D)Mini	Rho(D)Mini	Rho(D)Ig Rhlg human mini-dose	
90386			Rho(D)IV	Rho(D)IV	Rho(D)Ig Rhlg human IV	
90389	13		TiG	BayTet	Tetanus Ig human	
				TiG		
90393	79		Vaccinia immune globulin	Vaccinia-Ig	VacciniaIg human	
90396	36		VZIg	VZIg	Varicella-zoster Ig human	
	117		VZIG (IND)	VariZIG		CNJ
			Varicella IG			
90665	66	Lyme	Lyme	LYMErix	Lyme disease	SKB
90735	39	Encephalitis	Japanese encephalitis-SC	JE-Vax	Japanese encephalitis-Subcutaneous administration	JPN
90738	134		Japanese encephalitis-IM	Ixiaro	Japanese Encephalitis-Intramuscular administration	NOV
90705	05	Measles	Measles	Measles	Measles live 1964-1974 (Eli Lilly)	MSD

CPT	CVX	Group	Vaccine	Trade Name	Description	MFG
				Attenuvax	Measles live	MSD
90708	04		Measles-Rubella	M-R-VAX	Measles and rubella live	MSD
				Measles-Rubella (MERU)		MSD
90704	07	Mumps	Mumps	Mumps	Mumps 1950-1978	MSD
				Mumpsvax	Mumps live	MSD
90709			Rubella-Mumps, NOS			
	38		Rubella-Mumps	Biavax II	Rubella and mumps live	MSD
				Mumps-Rubella (MURU)		MSD
90707	03	MMR	MMR	MMR II	Measles, mumps and rubella live	MSD
90710	94		MMRV	Proquad	Measles, mumps, rubella, varicella live	MSD
90733	32	Meningo	Meningococcal-MPSV4	MENOMUNE	Meningococcal polysaccharide	PMC
90734	114		Meningococcal MCV4	Menactra	Meningococcal [Groups A, C, Y and W-135] Polysaccharide Diphtheria Toxoid Conjugate Vaccine	PMC
	108		Meningococcal, NOS		Meningococcal, NOS	
	11	Pertussis	Pertussis	Pertussis	Pertussis vaccine	
90727	23	Plague	Plague	Plague	Plague	GRE
90712	02	Polio	Polio oral	ORIMUNE	Poliovirus OPV live oral	WAL
90713	10		Polio injectable	IPOL	Poliovirus inactivated IPV	PMC
90723	110		DTAP-HepB-Polio	Pediarix	DTAP-HepB-Polio combination	SKB
90698	120		DtaP-Hib-IPV	Pentacel	DtaP-Hib-IPV combination	PMC
90696	130		DTaP-IPV	Kinrix	DTaP-IPV combination	SKB
	89		Polio-Unspecified		Polio, NOS	
90732	33	Pneumo-Poly	Pneumococcal 23	PNU-IMUNE 23	Pneumococcal polysaccharide 23 valent	WAL
				Pneumovax 23		MSD
90669	100	Pneumococcal	Pneumo-conjugate	Prevnar	Pneumococcal conjugate polyvalent	WAL
90670	133		Pneumo-conjugate 13	Prevnar 13	Pneumococcal conjugate vaccine, 13 valent	PFR
	109		Pneumococcal-Unspecified			
90675	18	Rabies	Rabies-intramuscular	RabAvert	Rabies intramuscular	NOV
				Imovax Rabies IM		PMC
90676	40		Rabies-intradermal	Imovax Rabies ID	Rabies intradermal	PMC
90726	90		Rabies-NOS		Rabies not otherwise specified	
90680	74	Rotavirus	Rotavirus, Tet	RotaShield	Rotavirus tetravalent live oral (removed on 10/16/1999)	WAL
90680	116		Rotavirus, Pent	RotaTeq	Rotavirus pentavalent (after 02/02/2006)	MSD
90681	119		Rotavirus, monovalent	Rotarix	Rotavirus monovalent	SKB
	122		Rotavirus		(between 10/16/1999 and 02/01/2006)	
90706	06	Rubella	Rubella	Rubella	Rubella live	MSD
				Meruvax II		MSD
90708	04		Measles-Rubella	Measles-Rubella (MERU)	Measles and rubella live	MSD
				M-R-VAX		MSD
90709			Rubella-Mumps NOS		Rubella-Mumps, NOS	
	38		Rubella-Mumps	Mumps-Rubella (MURU)	Rubella and mumps live	MSD
				Biavax II		MSD
	75	Smallpox	Smallpox	Dryvax	Vaccinia(Smallpox) dry	WAL
	105		Vaccinia (Smallpox), diluted	Vaccinia (smallpox), diluted	Vaccinia (smallpox), diluted	
90718	09	Td	Td	Td	Tetanus and diphtheria adult	PMC
	09					MBL
90714	113		Td preservative free	DECAVAC	Td preservative free – CPT code is effective for immunizations given on or after 7/1/2005	PMC
				Td P-free		MBL
90715	115		TdaP > 7 Years	Adacel	TdaP > 7 years	PMC
				Boostrix		SKB
90715	115	Tdap	TdaP > 7 Years	Adacel	TdaP > 7 years	PMC
				Boostrix		SKB
90703	35	Tetanus	Tetanus	TT	Tetanus	PMC
	112		Tetanus Toxoid, NOS		Recorded as CVX 35	
90690	25	Typhoid	Typhoid-oral	Vivotif Berna/Ty21a	Typhoid oral	
90691	101		Typhoid-ViCPs	Typhim Vi	Typoid VI capsular polysaccharide	PMC
90692	41		Typhoid-H-P	Typhoid	Typhoid heat and phenol inactivated	
90693	53		Typhoid-AKD	Typhoid-AKD	Typhoid acetone-killed, dried (military)	

CPT	CVX	Group	Vaccine	Trade Name	Description	MFG
90714	91		Typhoid-NOS		Typhoid not otherwise specified (after 7/1/2005, no CPT code is associated with this vaccine group)	
90710	94	Varicella	MMRV	Proquad	MMRV	MSD
90716	21		Varicella	Varivax	Varicella live	MSD
90717	37	Yellow Fever	Yellow Fever	YF-VAX	Yellow Fever live	PMC
90736	121	Zoster	Zoster (shingles), live	Zostavax	Zoster (shingles), live	MSD

{ TC "Appendix C - Obtaining the WIR Real-time SSL Certificate"\l }Appendix C – Obtaining the NESIIS Real Time SSL Certificate

The following instructions detail obtaining the NESIIS SSL certificate using Internet Explorer. Instructions for importing the certificate into the PHINMS 2.1 client certificate store are also given. If you are not using the PHINMS 2.1 client, follow the export instructions and contact your company technical support team for help with importing the certificate file into your company certificate store.

{ TC "Exporting the WIR SSL Certificate" }EXPORTING THE NESIIS SSL CERTIFICATE

Go to https://nesiis-dhhs-prod.ne.gov/prd_ir/portalInfoManager.do

Login to Directory Services

On the NESIIS Logon Page

If presented with a Certificate Prompt, select Yes. (This prompt will appear only for first time users.)

Double-click on the locked padlock icon in the lower right-hand corner of the screen.
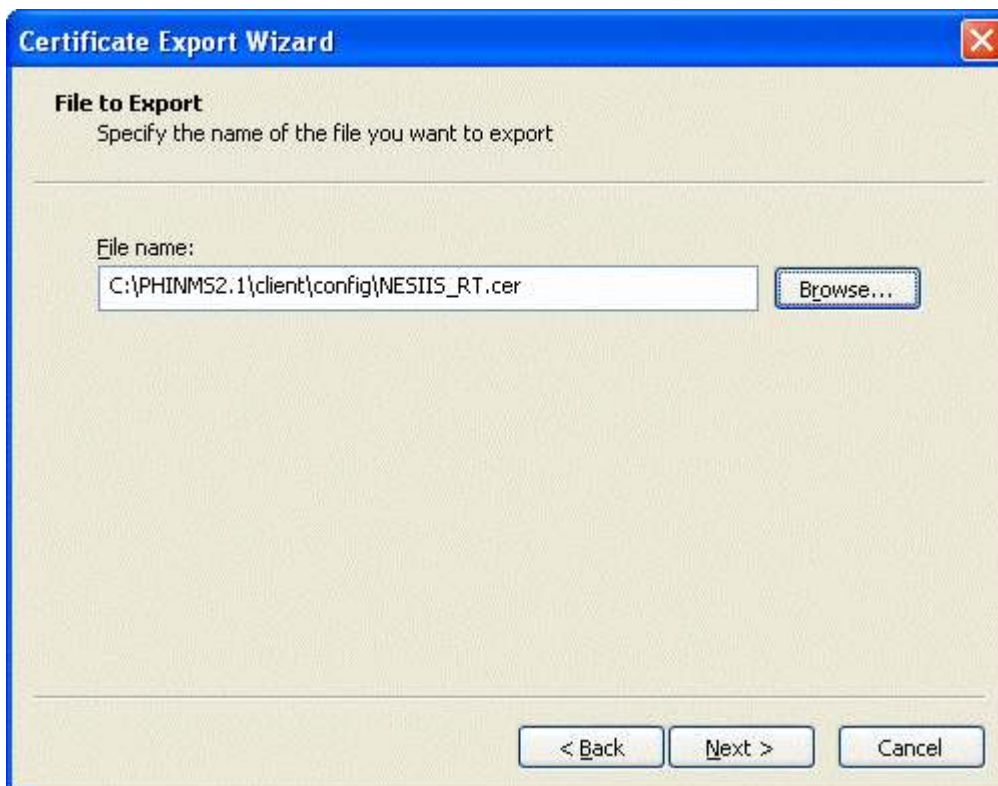
Click on the **Details** tab at the top

Click on the **Copy to File…** button in the lower-right

Click **Next >**
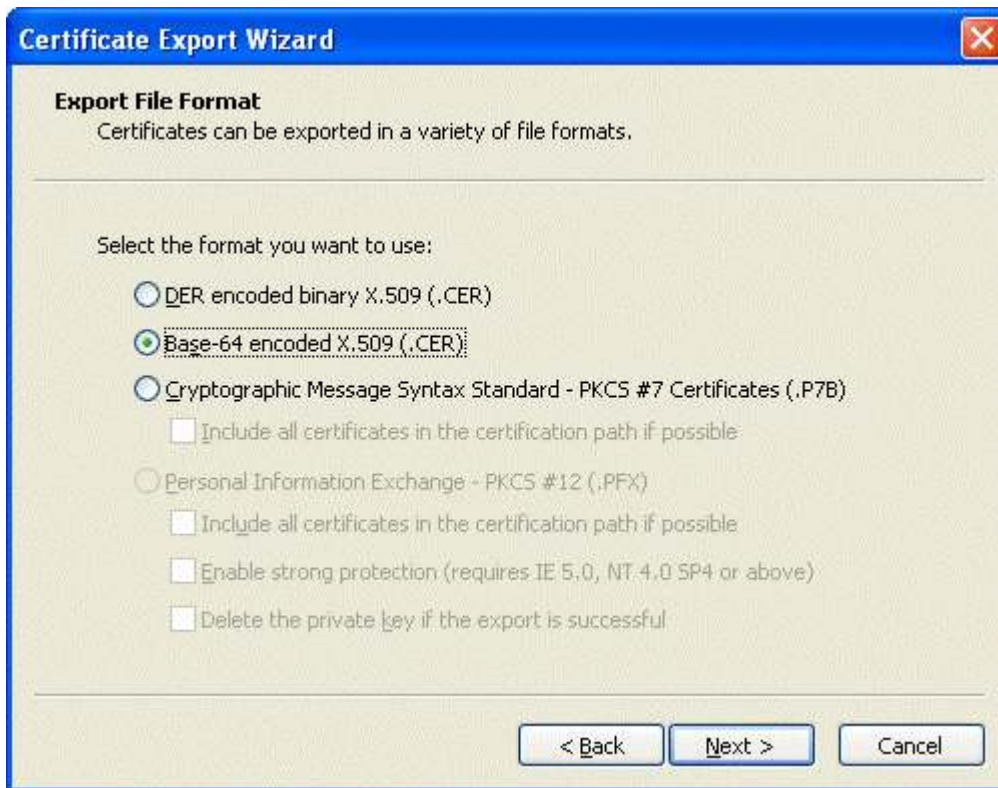
Click the **Base-64 encoded X.509 (.CER)** radio button, then click **Next >**

Type a file name to contain the exported certificate. In example above, we have **Browsed** to the PHINMS21 client config directory and named the file **NESIIS_RT**. Note: You will need to specify the path and file name when importing the certificate in a later step so take note of where you place it and what you name it.   Click **Next**
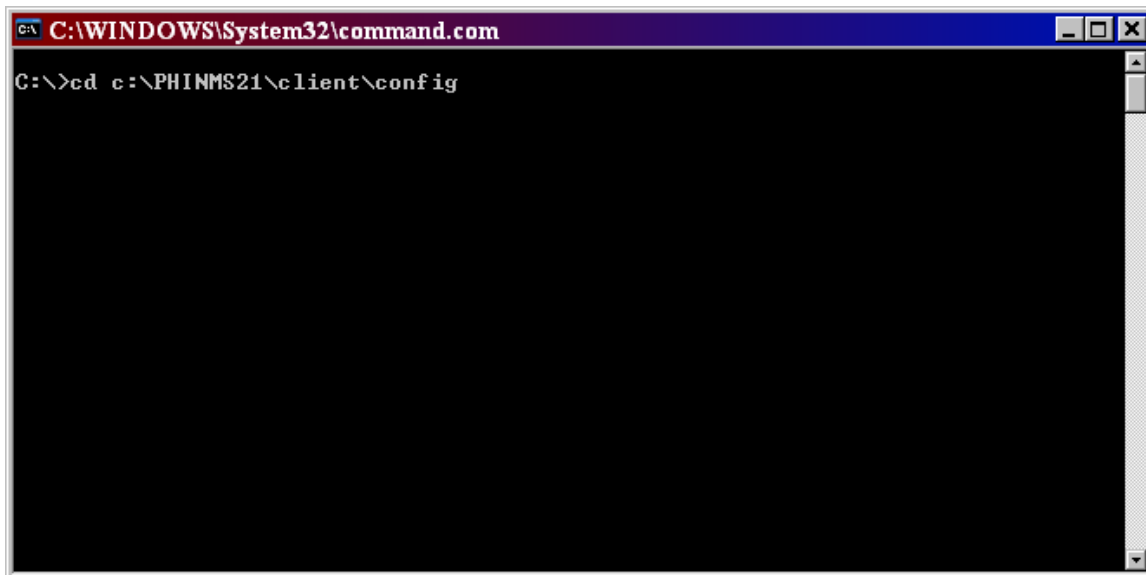
Click **Finish**

Click **OK**

Click **OK** on the Certificate Details

IMPORTING THE NESIIS SSL CERTIFICATE

The remaining steps assume PHINMS client usage.

Open a command prompt (on a windows machine, click **Start**, **Run**, and type **Command**)
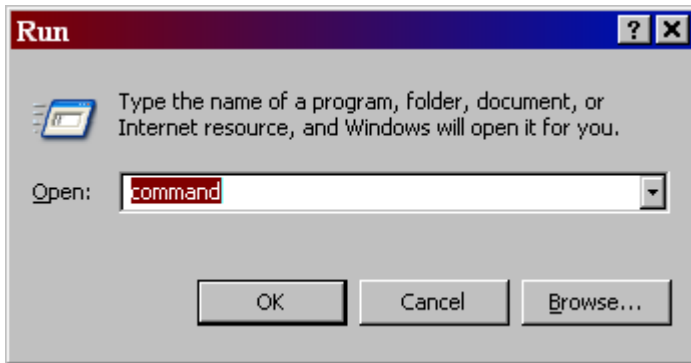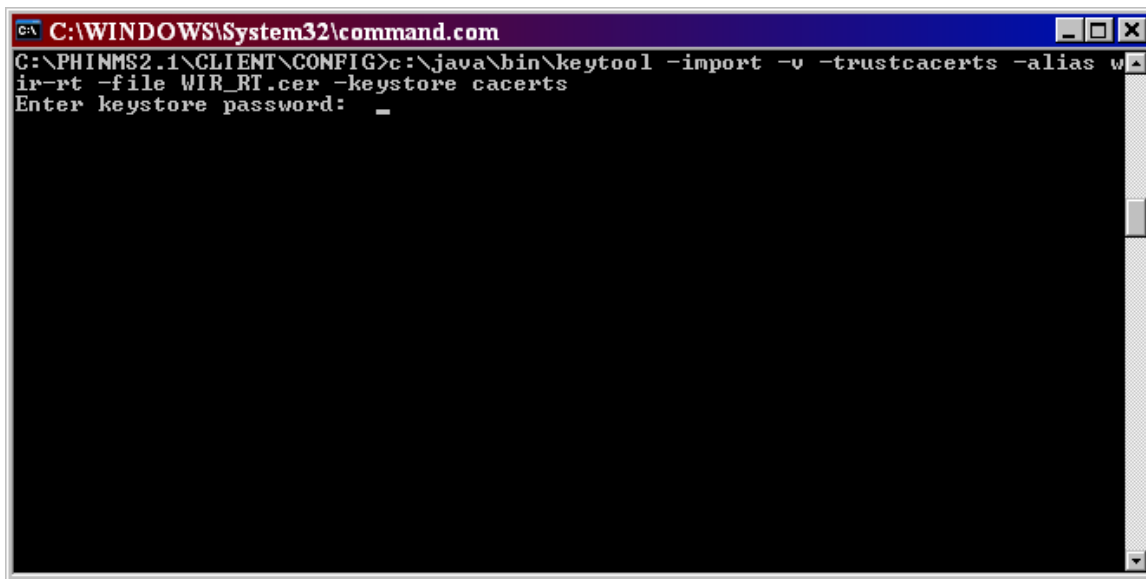

Click **OK**

Change directory to the location where the newly created certificate was stored.

Enter the following command:

keytool –import –v –trustcacerts –alias nesiis-rt –file NESIIS_RT.cer –keystore cacerts

where, "nesiis-rt" can be anything unique and not already in the cacerts file. The cacerts is the keystore.
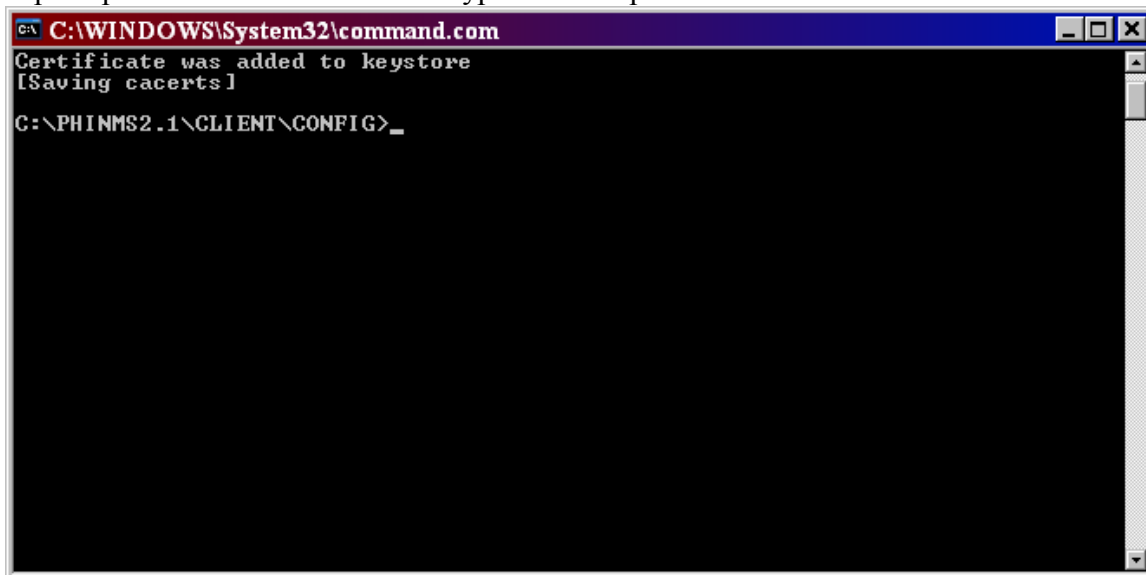Note: keytool is a java tool, ensure that your java/bin directory is in your path or type the full location
(e.g., c:\java\bin\keytool as shown in the screenshot.)

```
C:\WINDOWS\System32\command.com                                        _ □ ✕
C:\PHINMS2.1\CLIENT\CONFIG>c:\java\bin\keytool -import -v -trustcacerts -alias w
ir-rt -file WIR_RT.cer -keystore cacerts
Enter keystore password:  _
```

Enter the keystore password and press enter
If prompted to trust this certificate type "Y" and press enter

```
C:\WINDOWS\System32\command.com                                        _ □ ✕
Certificate was added to keystore
[Saving cacerts]

C:\PHINMS2.1\CLIENT\CONFIG>_
```

type **exit** to close the command prompt window